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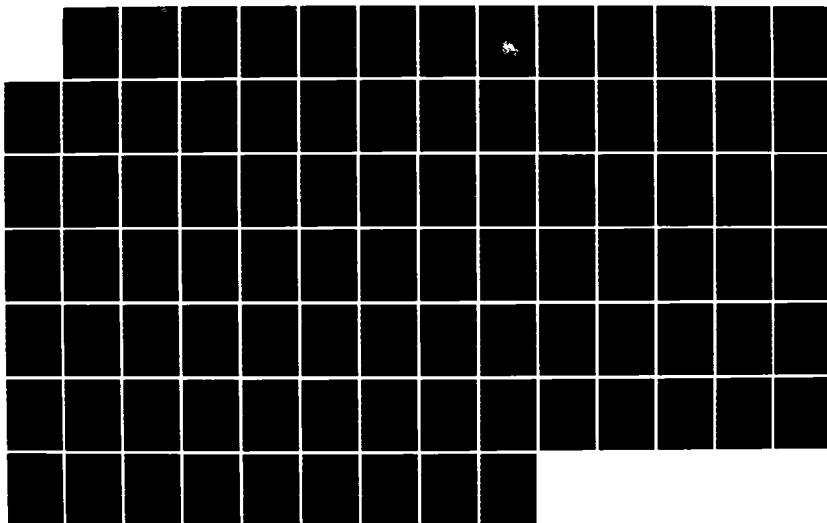
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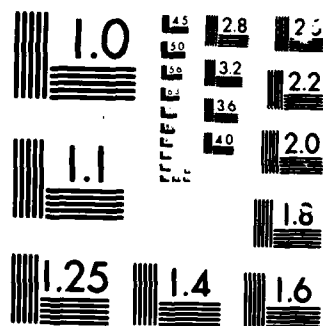
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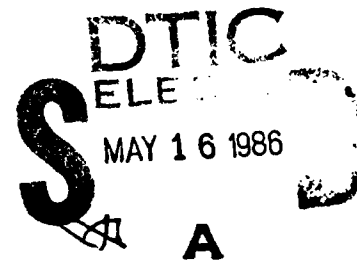
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A description of the building materials data base for Pittsburgh, Pennsylvania

Carolyn J. Merry and Perry J. LaPotin

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A building materials sampling program for the Pittsburgh, Pennsylvania, region was conducted in December 1984 through February 1985 to examine the types and amounts of building surface materials exposed to acid deposition. A stratified, systematic, unaligned random sampling approach was used to generate sample points across six sampling frame areas. A minimum of 70 sample points was examined per sampling frame to yield a total sample size of 541 points. Building sizes, surface materials, roof characteristics, roof-mounted apparatus, chimneys, gutters, downspouts and fences were recorded. This report provides an initial summary of the data collected.		

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PREFACE

This report was prepared by Carolyn J. Merry, Research Physical Scientist, Earth Sciences Branch, Research Division, U.S. Army Cold Regions Research and Engineering Laboratory, and Perry J. LaPotin, Senior Programmer, Department of Physics and Astronomy, Dartmouth College, Hanover, New Hampshire. This research has been funded as part of the National Acid Precipitation Assessment Program by the U.S. Environmental Protection Agency under reimbursable order number DW21930284-01-0.

The authors extend their appreciation to Dr. Harlan McKim (CRREL), who was a co-investigator on this project, for his support and helpful technical discussions on the study; to Henry Edwardo (Pittsburgh District, Corps of Engineers) for initial coordination of the field inventory program; to Bill Karaffa and Frank Moulis (Pittsburgh District) for their assistance in gathering the building inventory data in Pittsburgh; to Cora Farnsworth (CRREL) for typing the data into the computer; to Sonya Travis (CRREL) for coding the data from the worksheets and assisting in editing the Pittsburgh data base; to Stephen Bowen and Donna Murphy (CRREL) for their helpful suggestions in designing the building worksheet form; and to Dr. Harlan McKim and Dr. Thomas Adler (Thayer School of Engineering, Dartmouth College) for their technical reviews of this report. The excellent field program conducted by the Pittsburgh District is greatly appreciated; without Bill Karaffa and his staff, the field effort would not have been possible.

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A DESCRIPTION OF THE BUILDING MATERIALS
DATA BASE FOR PITTSBURGH, PENNSYLVANIA

by

Carolyn J. Merry
Perry J. LaPotin

INTRODUCTION

Background

The Interagency Task Force on Acid Precipitation manages the National Acid Precipitation Assessment Program (NAPAP). There are ten Task Groups in the task force, one for each of the nine research areas in the national program and one for international activities (Table 1). The goal of NAPAP is to develop and improve a data base that will help researchers understand the causes and effects of acid deposition and how it can be effectively managed. Our work on the acid rain program has been with the Environmental Protection Agency in support of Task Group G, which examines the Effects on Building Materials and Cultural Resources, as part of the ongoing effort to define the type and magnitude of building materials exposed to acid deposition in the northeastern United States.

The purpose of our research is to develop a data base of specific building materials types that are sensitive to acid deposition. Our data bases were to build upon prior data bases (St. Louis, Missouri; Baltimore, Maryland; Boston, Massachusetts) collected in support of the EPA Acid Rain Research Program (McFadden and Koontz 1980, TRC Consultants, Inc., 1983). A systematic sampling algorithm has been developed to sample buildings from a given city (Ling and Rosenfield 1980) and it can be applied to other cities across the United States according to urban similarity patterns.*

New Haven, Connecticut, and Portland, Maine, were selected as the first New England test sites to obtain ground truth data on building surface materials (Merry and LaPotin, in prep., 1985b). These two cities are similar to one another in terms of land area and population.* In this way our sample design could be tested by predicting building materials

* Personal communication with James Wray and George Rosenfield, U.S. Geological Survey, 1985.

Table 1. The ten Task Groups within the National Acid Precipitation Assessment Program (after Interagency Task Force on Acid Precipitation 1984).

Task Group		Coordinating agency
A	Natural sources	NOAA
B	Man-made sources	DOE
C	Atmospheric processes	NOAA
D	Deposition monitoring	DOI
E	Aquatic effects	EPA
F	Terrestrial effects	USDA
G	Effects on materials and cultural resources	DOI
H	Control technologies	EPA
I	Assessments	EPA
J	International activities	DOS

NOAA - National Oceanic and Atmospheric Administration
 DOE - Department of Energy
 DOI - Department of Interior
 EPA - Environmental Protection Agency
 USDA - United States Department of Agriculture
 DOS - Department of State

distribution in an unknown city (Portland) using the data from a known city (New Haven).

In Task Subgroup G's 13 July 1985 meeting, the subgroup recommended collecting data on building materials sensitive to acid rain deposition for two additional cities: Pittsburgh, Pennsylvania, and Cincinnati, Ohio. Both cities were located close to Corps of Engineers Division and District offices, so that the field personnel were familiar with the city, allowing the field program to run smoothly. Also, these two cities were located in the Ohio River Valley where there is significant acid deposition from large utilities emitting sulfates (LaPotin 1984).

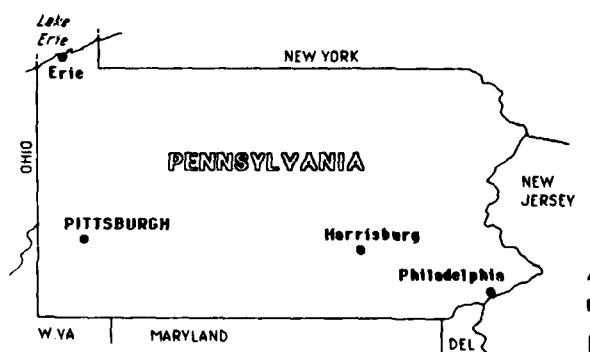


Figure 1. Pittsburgh, Pennsylvania.

Objective

This report presents the data base of building materials collected for Pittsburgh, Pennsylvania (Fig. 1). The description of the original data will be presented along with distribution summaries in the form of frequency tables, histograms and bar charts. In future reports the data will be analyzed to determine the suitability of the collected variables for predicting building materials distribution.

DESIGN OF THE FIELD SAMPLING PROGRAM

Sampling frame definition

The city of Pittsburgh, Pennsylvania, was subdivided into the sampling frames of Urban Central Business District (UCBD), Urban Livelihood, Industrial-Commercial (ULIC), Urban Multi-Family Residential (UMFR), Urban

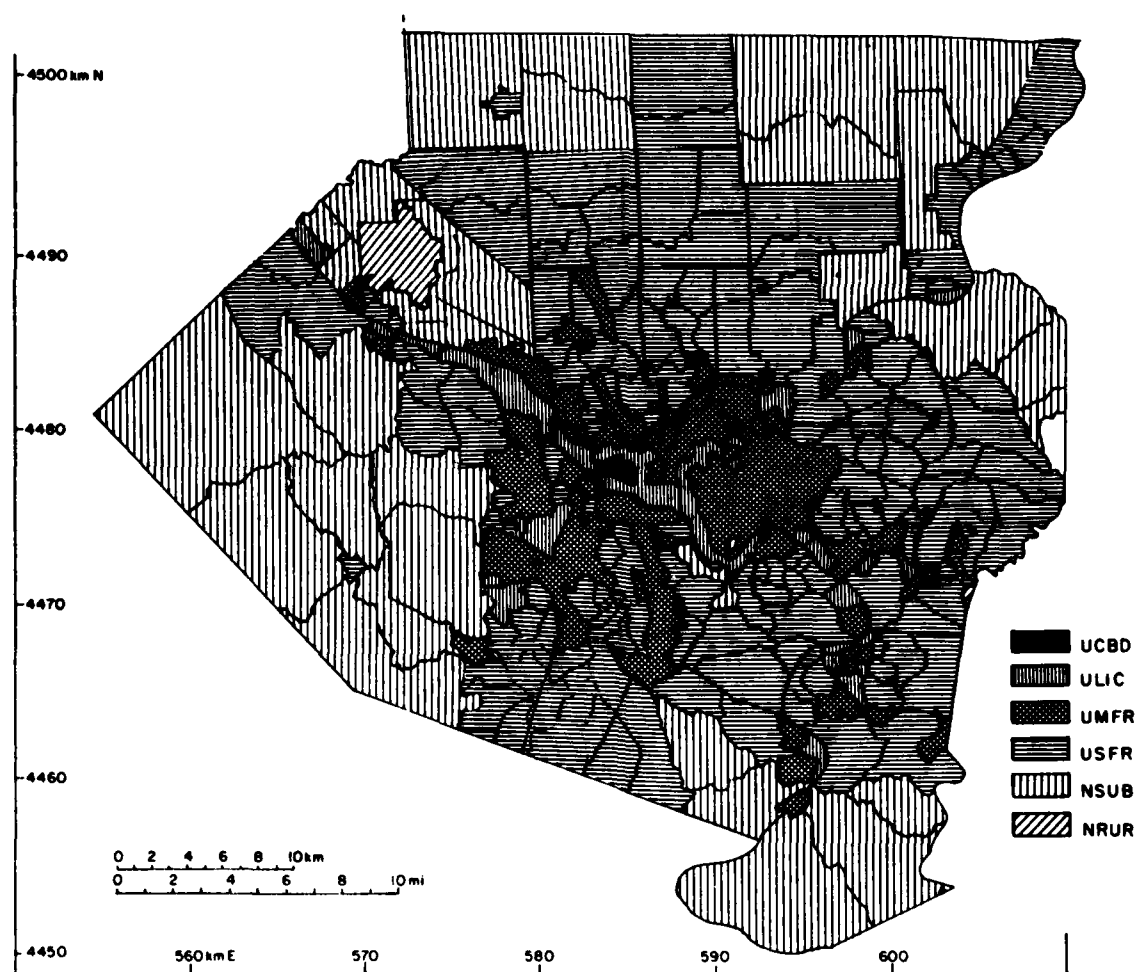


Figure 2. Sampling frames for the Pittsburgh, Pennsylvania, area (after Rosenfield 1984).

Single-Family Residential (USFR), Nonurban Suburbanizing (NSUB) and Non-urban Rural (NRUR) (Fig. 2) by the U.S. Geological Survey.* Each sampling frame is composed of a number of census tracts with a commonality on the basis of population density, number of single-unit dwellings and land use (Rosenfield 1984).

Selection of sample points

The sample points for each sampling frame were also generated by the U.S. Geological Survey procedure. A sample size of 70 was calculated previously using the Revere, Massachusetts, data base of buildings (Merry and LaPotin 1985a). This was obtained by multiplying the minimum sample size determined from the cumulative multinomial distribution (30) by the design effect (2.34) (Rosenfield 1984). The stratified, systematic, unaligned random sampling procedure used in the New Haven, Connecticut, field sampling program (Merry and LaPotin 1985b) was modified by the U.S. Geological Survey for the Portland, Maine, field survey to distribute the points across only the land cover types likely to contain buildings. Thus the land cover types above 24 (Table 2), which included rangeland, forest land, water, wetland and barren land, were not considered when generating points so that a minimum of empty sample points were encountered in the field. The sample point selection procedure used in Portland was also used in Pittsburgh.

Table 3 shows the total number of points that were generated for the Pittsburgh field survey program. The Universal Transverse Mercator (UTM) coordinates for each sample point are shown in Appendix A.

Each sample point had a corresponding "footprint" or a given spatial area on the ground that was examined during the field survey. The footprint size was calculated in accordance with the procedure used in the New Haven study (Merry and LaPotin 1985b). The average values of the total amount of land and the number of dwelling units (taken from 1980 census data) for each sampling frame were used in a simple PASCAL program to determine the footprint size for each sampling frame (Appendix B). The footprint areas were constrained to sample no more than 30% of the total UCED frame. The final footprint sizes used in Pittsburgh are shown in Table 4.

* Personal communication with James Wray, U.S. Geological Survey, 1984.

Table 2. Land use and land cover categories of the U.S. Geological Survey
(after Anderson et al. 1976 and Rosenfield 1984).

<u>Collapsed categories</u>	<u>Level I</u>	<u>Level II</u>
Built residential	1 Urban or builtup land	11 Residential
Built nonresidential		12 Commercial and services
		13 Industrial
		14 Transportation, communications and utilities
		15 Industrial and commercial complexes
		16 Mixed urban or builtup land
		17 Other urban or builtup land
Open land, with buildings	2 Agricultural land	21 Cropland and pasture
		22 Orchards, groves, vineyards, nurseries and ornamental horticultural areas
		23 Confined feeding operations
		24 Other agricultural land
	3 Rangeland	31 Herbaceous rangeland
		32 Shrub and brush rangeland
		33 Mixed rangeland
	4 Forest land	41 Deciduous forest land
		42 Evergreen forest land
		43 Mixed forest land
Omitted from analysis	5 Water	51 Streams and canals
		52 Lakes
		53 Reservoirs
		54 Bays and estuaries
Open land, without buildings	6 Wetland	61 Forested wetland
		62 Nonforested wetland
	7 Barren land	71 Dry salt flats
		72 Beaches
		73 Sandy areas other than beaches
		74 Bare exposed rocks
		75 Strip mines, quarries and gravel pits
		76 Transitional areas
		77 Mixed barren land

Table 3. Number of sample points for the Pittsburgh, Pennsylvania, building materials inventory.

Sampling frame	No. of points with buildings	No. of empty points	Total points
UCBD	60 (73%)*	22 (27%)	82 (100%)
ULIC	85 (86%)	14 (14%)	99 (100%)
UMFR	82 (78%)	23 (22%)	105 (100%)
USFR	90 (88%)	12 (12%)	102 (100%)
NSUB	--	--	74**
NRUR	--	--	79**
Total	317 (82%)	71 (18%)	388 (100%)

* Percentage values refer to the sample size of 388.

** Points not sampled in Pittsburgh.

Table 4. Footprint sizes for the Pittsburgh, Pennsylvania, sampling frames.

Sampling frame	Footprint size	
	(ft)	(m)
UCBD	310	94
ULIC	264	80
UMFR	207	63
USFR	481	147
NSUB	1164	355
NRUR	2139	652

Field survey

The field survey began in December 1984 and was completed in February 1985 by two-person teams from the Pittsburgh District, Corps of Engineers.

During the initial field work in the UCBD sampling frame, the field teams found that several buildings, as many as 18, were contained within a given footprint. To avoid extensive field work for any given footprint,

the number of buildings sampled for each footprint area was limited. The centermost building was sampled, and to ensure that we had a representative sample per footprint (for example, that the spatial area of the building not be extremely small in comparison to the footprint area), we sampled enough buildings so that the total spatial area of the sampled buildings was at least 10% of the footprint area. The buildings inventoried in the field were chosen randomly about the centerpoint of the footprint.

During the field sampling program, we found that the sampling of the urban sampling frames (UCBD, ULIC, UMFR, USFR) would take as much time and money as we had estimated for the entire city of Pittsburgh because both the Pittsburgh area and its footprint sizes were large in comparison to New Haven and Portland. The nonurban sample points (NSUB, NRUR) were also located much farther apart and travel time to each point was extensive. Because of monetary constraints, we limited the field survey in Pittsburgh to only the four urban sampling frames given above, meaning that 388 points out of the total 541 sample points generated for Pittsburgh were sampled (153 rural points were dropped). This report only addresses the results found for the urban sampling frames in Pittsburgh.

The building worksheet was similar to the worksheet used in the New Haven study. Based on recommendations of the CRREL survey teams in New Haven and Portland, the worksheet was simplified and redesigned. The worksheet used in the Pittsburgh field survey is shown in Appendix A. The worksheet form was designed to provide information on the characteristics of the surrounding terrain in terms of census tract, land use type and sampling frame; the dimensions and type of building; the lot size; the materials distribution percentages in the foundation, first story and all above stories; and the surface area and material types for the roof, roof-mounted apparatus (vents, flues, stacks, skylights and flashing), chimneys, rain gutters, downspouts and fences.

DATA DESCRIPTION

Each sample point was recorded on an individual data sheet during the survey. If the sample point was empty, the sections concerning description of the building were coded as zeros. When coding the data for a footprint that contained more than one building, the structure selected for coding was chosen randomly. Another variable (NBUILD) was added to the

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	MISSING PERCENT
NO MATERIAL	0	311	98.1	98.1	98.1
PAINTED	1	3	.9	.9	.9
BARE GALVANIZED	2	1	.3	.3	.4
OTHER	4	2	.6	.6	100.0
TOTAL		317	100.0	100.0	

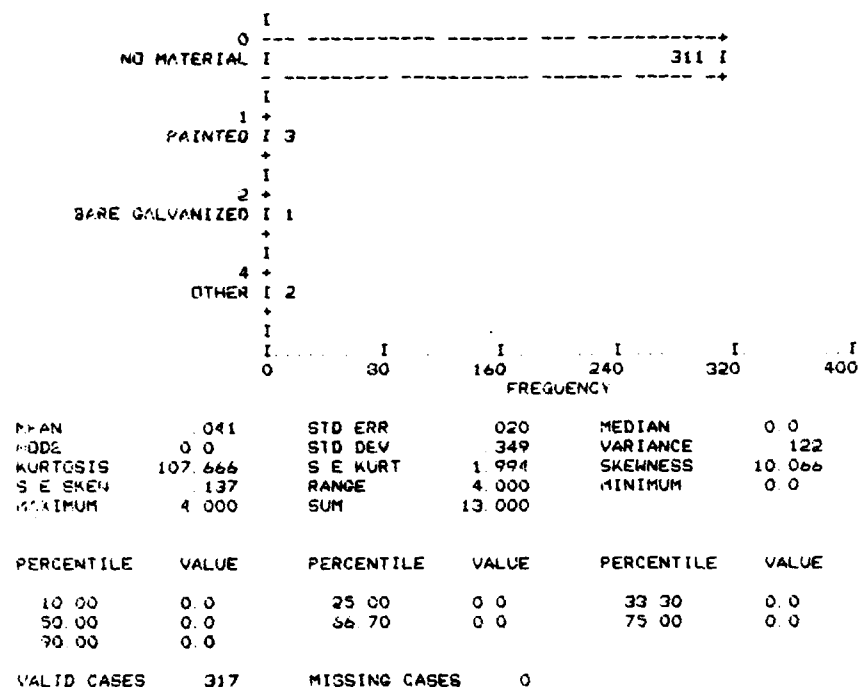


Figure 3. Sample page of frequency analysis data.

data base to record the total number of buildings occurring within a footprint. Usually, there were not more than three buildings inventoried in the field for a given footprint. The data were checked several times using the procedures described in Appendix B.

The variables assigned to the Pittsburgh field data are described in Appendix C, Description of the Variables section. The frequency runs for the variables are also presented in Appendix C. For each variable, numeric summaries are provided first (for example, the labels for each value with frequency of occurrence and percent of the distribution), followed by graphic presentation (histogram or bar chart), and ending with statistical summaries (for example, mean, mode, skewness and kurtosis). The sample size is presented at the bottom of each summary section, along with the number of missing cases (or observations). Each observation corresponds to a footprint sample point for the four sampling frames in Pittsburgh. Figure 3 is an example of how the frequency runs are presented in Appendix C.

Certain variables pertain exclusively to building materials exposure and distribution — for example, exposed walls in footprint (EWIF) and average wall height (HT). The frequency runs for the building description variables are tabulated using the sample size of 317 cases where buildings were observed in the footprints (Table 2). The frequency runs for all other variables not related specifically to the building description, such as the land use, sampling frame, sample point number and census tract for a given footprint, use the 388 total number of cases.

The column headings marked VALUE represent the actual observed value for the variable. FREQUENCY (denoted FREQ) represents the number of cases falling within the category. Percent (PCT) and cumulative percent (CUM PCT) represent the percent of the total falling within the specified category and the running cumulative percent, respectively; the cumulative percent for the last category is always 100.

Analysis was done using the Statistical Package for the Social Sciences (SPSS) software on a VAX-11/785 minicomputer (see Nie et al. 1975). A more in-depth discussion of the summary statistics can be found in most elementary applied statistics texts (e.g., Snedecor and Cochran 1980).

DISCUSSION

The frequencies provided in Appendix C are separated into six sections. In the first, the Major Classification Variables are presented. The variables include the distribution of land use designation (LU), sampling frame (SFRAME), sample point number (SPOINT) and census tract (TRACT) for the 388 total number of observations.

The land use classification for each sample point (LU) was based on its location within the digital land use information data base from the Geographic Information Retrieval and Analysis System (GIRAS) (Mitchell et al. 1977). The aerial photography source materials used in GIRAS are dated from 1972-74 (Loelkes 1977). The minimum mapping unit for the land cover map is 10 acres (0.04 km²) for the level II categories 11-17, 23-24, 51-54, 75 and urban occurrences of 76 (Table 2). The minimum mapping unit for the remaining level II categories was 40 acres (0.16 km²).

Almost half of the sampled footprints in Pittsburgh fall within the residential land use class. Another 28% are within the commercial and services land use class and 12% are within the industrial class. These

three land use types total near 87% of the footprints. Cumulative percents show that 94% of the sample points fall within the level I category of urban or builtup land with the remaining 6% found within the level I category of agriculture.

The sampling frame (SFRAME) displays the distribution of footprints within a given sampling frame. The minimum number of sampled points for a given subcategory is 82, corresponding to the UCBD class. The frequency table for SPOINT shows the sampled distribution and illustrates that all sampling frames contain the minimum of 82 points. As expected, the distribution is roughly uniform across individual sampling frames.

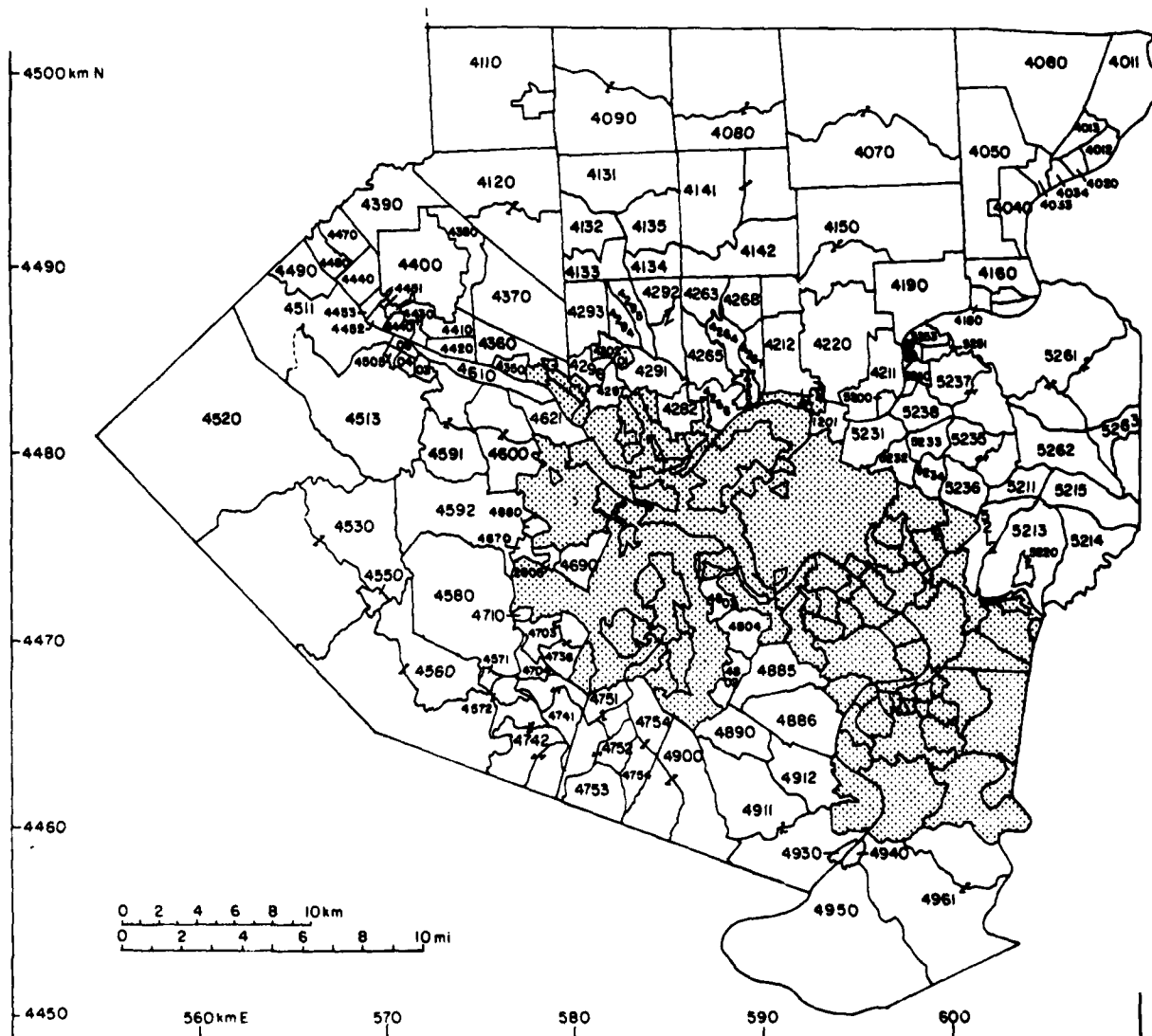


Figure 4. Census tracts for the Pittsburgh, Pennsylvania, area (after US Census Bureau 1980).

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The second section contains the Census Tract Data Variables from the U.S. Bureau of Census and the land areas within five land use classes derived from the U.S. Geological Survey GIRAS data base that correspond to the 190 sampled census tracts in Pittsburgh. There were eight variables, based on the 1980 census, coded into the Pittsburgh data base. Three of the variables included the total population in the census tract (POP), the total number of housing (dwelling) units in a census tract (DU) and the number of dwelling units in one-unit structures (U1). The U.S. Geological Survey combined several of the GIRAS land cover types into the following five land cover classes: the built nonresidential land use (ABNR), the built residential land use (ABR), the open land containing no buildings (AO), and the open land containing buildings (AOB). The land area values are in millions of square feet.

The built residential category includes the level II urban category of residential (see Table 2). The built nonresidential category includes the urban categories of commercial and services, industrial, transportation, communications and utilities, industrial and commercial complexes, and the mixed urban or builtup land. The open land with buildings category includes the other urban or builtup land, and the entire level I agricultural, rangeland and forest land categories. The open land without buildings includes the level I categories of wetlands and barren land.

The tract population (POP) variable shows a maximum value of 14,257 people and a minimum population of 204 people per census tract. The average population per tract is 3375 people; however, the median tract population is 2633 people. The distribution is skewed right (skewness = 1.37) reflecting the larger than normal number of tracts (as compared to the normal distribution with equivalent mean and variance) whose population is below the average value.

The total dwelling units in a given tract varies from 1 to 4917 dwelling units. The average number of units per tract is 1320 with a standard deviation of 936 units. The average number of dwelling units in one-unit structures (U1) is 745 units. The range of dwelling units is large, ranging from 1 to over 3722 units. The 25 and 75% percentile values show that 50% of the tracts contain between 23 and 1089 units.

The remainder of the census tract variables in Appendix C represent the millions of square feet of land within the categories of built nonresi-

dential (ABNR), built residential (ABR), open land without buildings (AO) and open land with buildings (AOB). In comparing the means of the above five variables, the majority of the land in Pittsburgh is built residential. Overall, the least amount of land was found in the category of built nonresidential, with an average value of 640,000 ft².

Third third section of Appendix C presents General Building Description Variables, including wall dimensions. Frequencies are tabulated using the 317 cases where buildings were observed. Variables include the approximate age of the structure (AGE), exposed walls in the footprint (EWIF), average wall height (HT), lot size (LOT1 and LOT2), number of buildings in the footprint (NBUILD), side dimensions (SIDE1 and SIDE2) and the building type (TYPE).

The first variable, AGE, represents the approximate age of the structure using the year 1900 as a base. For example, 1984 is shown as 84, 1900 as 0, and 1801 as -99. Less than 2% of the observed structures were built prior to 1900. Clustering occurs at decade intervals beginning from 1910 up to 1970. The majority of buildings were constructed from 1930 to 1940 (39%). The range of values shows a spread of 183 years in building age, a mean construction date of 1945, a median construction date of 1940, and the most frequently observed building construction date of 1930. The upper third of the building age distribution begins in 1960.

The exposed walls in footprint (EWIF) is the perimeter (in feet) of the buildings contained within the footprint. EWIF is recorded for use in calculating the area of building wall surfaces within a sampled footprint. Of the 317 structures sighted, 69% show EWIF values of 240 ft and below. The histogram indicates that the distribution is skewed to the right (skewness = 1.7) with a mean value of 269 ft and a median value of 140 ft. The percentiles indicate that 10% of the observed structures display EWIF values 754 ft and above. Most values, however, fall between 100 ft and 140 ft of exposure (48%).

The variable indicating average wall height in feet (HT) for a sampled structure is also provided in this section. Over a quarter of the buildings are 30 ft in height. Cumulative percents suggest that the majority of observed wall heights are below 45 ft (80%). Using 12 ft per story as an average, 9% of the observations are one-story structures, 39% two-stories and below and 80% three-stories and below. The median value of 30 ft

corresponds to an average building size of almost three stories. The standard deviation of 71 ft reflects the variance of tall buildings found in Pittsburgh relative to the maximum observed height of 690 ft.

Lot size (LOT1 and LOT2) represents the side dimensions (in feet) of the plot of ground surrounding the building being sampled. The person on the survey team estimated the lot size in the field by using markers, such as fences and the proximity of adjacent buildings. The average length and width lot dimensions were 109 and 103 ft respectively. The most frequently occurring lot dimension was 50 ft. The percentiles show that 67% of the lot dimensions were 100 ft and below. The overall range of length and width lot dimensions was 735 and 580 ft respectively.

The variable NBUILD was added to the data set to represent the total number of buildings within a footprint (useful only if multiple structures were observed within a single footprint). About 25% of the footprints contained one building; 96% of the footprints contained eight buildings or less. The average number of buildings found within a footprint was four.

The variables SIDE1 and SIDE2 are the length and width dimensions (in feet) of the building. The average building dimensions are 85 and 71 ft respectively. The range in dimensions is up to 785 ft for SIDE1 and 486 ft for SIDE2. The most frequently occurring dimensions are 20 ft for SIDE1 and 30 ft for SIDE2. Both distributions are skewed to the right (with respective skewness values of 3.4 and 2.7) suggesting a greater frequency of smaller-sized buildings. (The median sizes are nearly half their respective means.)

The building type classification (TYPE) is useful in determining the distribution of individual structures by their type or use. In the frequency distribution, 71 of the 388 sampled footprints (18%) resulted in no structures being observed (Table 3). Of the footprints containing buildings (317), almost half were found to be one-unit residential structures. Other significant building types included commercial (20%), office (7%), industrial (6%), 2-unit residential housing (4%), and other building type categories (4%). Multiple unit housing (2-50 units) did not predominate in the parts of Pittsburgh that we sampled.

Actual Spatial Areas of Building Material Types are presented in the fourth section of Appendix C for the five composite building material

Table 5. The 21 material types grouped into five material types.

APAIINT

- Painted wood (excl. stained)
- Painted steel
- Painted aluminum
- Painted masonry
- Painted concrete
- Painted stucco
- Painted other material
- Painted other material (cannot identify)

AMORT

- Bare brick
- Bare block
- Bare field stone

ASTONE

- Bare marble
- Bare limestone
- Bare granite

AGALV

- Bare galvanized steel

AOTHER

- Bare wood (incl. stained)
- Bare concrete
- Bare glass
- Bare vinyl
- Bare other material
- Bare other material (unidentifiable)

classes recommended by the Interagency Task Force.* These areas represent the square feet of building surface walls potentially exposed to acid deposition. The five composite building materials that were computed are painted materials (APAIINT), mortar-masonry (AMORT), stone materials (ASTONE), galvanized metal (AGALV) and all other materials (AOTHER). From the original building worksheet (Appendix A), the 21 material types were combined into the five categories (Table 5).

In the structures sampled, 5% were found to have no exposed painted walls (APAIINT). Across the five sampling frames, a mean exposure of 6402

* Personal communication with F. Lipfert, Brookhaven National Laboratory, 1984.

ft² and a median of 826 ft² was observed. The standard deviation of 20,914 ft² reflects the wide range of exposures among individual structures, ranging from a minimum of nothing to a maximum of 215,219 ft². The distribution is significantly skewed to the right (skewness = 6.6) and is far more peaked (kurtosis = 52.7) than a normal distribution with a similar mean and standard error. The histogram illustrates the predominance of exposures around the 5119-ft² midpoint (75% of the exposures are below the 3000 ft² level).

Areas of exposed mortar-masonry material (AMORT) were observed on 276 structures, indicating that 13% of the footprints with buildings had no mortar-masonry exposure (of the total 388 sampled footprints, 71% had mortar-masonry walls). The mean mortar-masonry surface area (6385 ft²) is higher than the median exposure (2088 ft²), reflecting the skewness (5.0) of the distribution to the right. The 141,410 ft² range of mortar-masonry surface areas illustrates the large variability in exposure (standard deviation is 14,518 ft²). The percentile values indicate that 75% of the structures have exposures ranging from nothing to 4055 ft². Only 10% of the structures had exposures greater than 18,359 ft². As in the painted materials exposure, the mortar-masonry distribution is centered about smaller exposure values near the 3000-ft² level.

The distribution of exposed wall areas in bare stone materials (ASTONE) indicates that 60% of the sampled footprints with buildings had no bare stone exposure. Furthermore, cumulative frequencies suggest that 75% of those structures contained exposures below 323 ft². The summary statistics show that the mean level of exposure is 605 ft² with a standard deviation of 1824 ft². The median and mode values were 0, and the maximum exposed surface area was 13,756 ft².

The lowest level of material exposure for the structures sampled was found within the bare galvanized steel category (AGALV). Of the 317 footprints with buildings, 23 structures were composed of some portion of bare galvanized steel. Of the sampled footprints with buildings, 93% had no galvanized steel exposure. The summary statistics show a median and mode of 0, with a mean exposure of 3104 ft². The maximum exposed surface area was 500,319 ft².

The fifth composite material class is the remaining materials category, AOTHER, that includes all other materials not classified into the

above categories. Frequencies indicate that 41% of the footprints with structures contained no material in the AOTHER category, and the distribution of AOTHER materials is relatively uniform and non-clustering. The percentile values indicate that 75% of the other materials exposure is below the 546-ft² level. The 90th percentile rises to a maximum exposure for an individual building of 2249 ft² and above.

The fifth section in Appendix C is the Roof Material and Roof-Mounted Apparatus Items and Material Types section and related variables of exposed chimney area (CAREA), chimney material (CMAT), exposed roof area (ESAREA), roof material (ERMAT), roof slope (SLOPE) and the roof-mounted apparatus items (ITEM1, ITEM2, SKYM, RMAT, FLMAT, FLAREA) for the 317 observed buildings.

The mean surface area of an observed chimney (CAREA) is 75 ft² with a standard deviation of 124 ft². The mean and mode chimney exposure area is 0, reflecting the large absence of chimneys in the sampled area (50.5% without chimneys). When examining the chimney materials (CMAT), one notes that almost all of the observed chimneys (95%) are constructed of brick. A remaining 4% are either painted or of stone composition, with roughly 1% of the chimneys composed of other materials.

The exposed surface area of the roof (ESAREA) shows a wide range of values, from 90 ft² to nearly 1 million ft². The mean surface area observed was 17,638 ft², with 768 ft² being the most frequently found roof area. The standard deviation is quite high at 72,870 ft². The percentile values indicate that 75% of the roof areas are less than 7100 ft². The histogram is strongly skewed right, reflecting the prevalence of observed surface areas at about the 23,900-ft² level and below.

The roof material (ERMAT) is predominantly asphalt shingles (55%) or tar roof (38%) construction, with two thirds of the roofs being sloped, rather than flat (as indicated by the SLOPE variable).

There were 190 items recorded under ITEM1, the number of vents, flues and stacks (127 structures contained no items). These items were principally composed of painted material (see RMAT).

Only one building with skylights was observed in Pittsburgh. It had 10 skylights (ITEM2, SKYM), made of bare aluminum.

Six buildings with flashing material, FLMAT, were recorded (98% of the sampled structures had no flashing material). The flashings were painted,

bare galvanized and made of other materials. The flashing area (FLAREA) ranged from 200 ft² to over 999 ft².

The sixth section presents the variables of Rain Gutters, Downspouts and Fences for the 317 sampled structures. Rain gutters (RGMAT) and downspouts (DSPOUT) were found on 194 structures (61% of the structures). Over half of the rain gutters and downspouts were painted. The average length of a rain gutter (RGLNGTH) was 63 ft, and for a downspout (DSLENG) the average length was 38 ft. A standard deviation of 102 ft was observed for the rain gutters. The standard deviation was smaller for the downspouts (53 ft).

There were 31 fences (FENCE) observed within the sampled footprints (10% of the observed structures). The material types were equally divided among bare galvanized chain link, painted wood and other material types. Fence length and height were recorded in the field, but were multiplied together to obtain the fence area variable (FAREA). This did not take into account any open areas within the fence. The average fence area was 46 ft² with a standard deviation of 190 ft².

CONCLUSIONS

A building materials sampling program for the Pittsburgh, Pennsylvania, area was conducted from December 1984 to February 1985. A stratified, systematic, unaligned random sampling procedure was used to generate sample points across four sampling frame areas. Using this procedure, a total of 388 points representing a minimum of 82 sample footprints per frame were surveyed. A diversity of data was taken on building size and surface material, roof characteristics and roof apparatus, chimneys, gutters, downspouts and fences. The Pittsburgh data are summarized according to overall material distribution by structure.

A summary table for the five composite materials exposures is provided in Table 6. The median exposures suggest that two of the principal categories, AGALV and ASTONE, rarely occur in the Pittsburgh sample. In addition, the percentage of structures not exhibiting these materials illustrates the prevalence of painted and mortar surfaces in the five sampling frames. Inner quartiles suggest that 50% of the observations about the median varied from zero to 546 ft² or less in three of the principal categories (AGALV, ASTONE and AOTHER). These findings, together with previous

field sampling in New Haven (Merry and LaPotin 1985b), indicate that additional or different composite material classes should be used to adequately categorize the distribution of building materials exposed across the five sampling frames (and between cities). In particular, the two categories of AGALV and ASTONE should be reclassified to allow for other material composite groups that appear with greater frequency.

Table 6. Summary statistics of the five composite material types.

Composite material class	Mean exposure (ft ²)	Median exposure (ft ²)	Inner quartile 50% about the median (ft ²)	Range (ft ²)	Percentage of structures not exhibiting the material (%)
APAIN	6402	826	281 to 2969	215,219	5
AMORT	6385	2088	559 to 4055	141,410	13
ASTONE	605	0	0 to 323	13,756	60
AGALV	3104	0	0 to 0	500,319	93
AOTHER	5370	25	0 to 546	213,222	41

LITERATURE CITED

- Anderson, J.R., E.E. Hardy, J.T. Roach and R.E. Witmer (1976) A land use and land cover classification system for use with remote sensor data. U.S. Geological Survey, Professional Paper 964.
- Interagency Task Force on Acid Precipitation (1984) Operating Research Plan, vol. I, Research Framework. Washington, D.C.: U.S. Government Printing Office.
- Ling, H.S. and G.H. Rosenfield (1980) A computer program for use in testing the accuracy of land use and land cover maps. U.S. Geological Survey, Internal Report.
- LaPotin, P.J. (1984) Dynamics of acid rain. Master's thesis. Hanover, N.H.: Dartmouth College.
- Loelkes, G.L., Jr. (1977) Specifications for land use and land cover and associated maps. U.S. Geological Survey, Open-file Report 77-555.

- McFadden, J.E. and N.D. Koontz (1980) Sulfur dioxide and sulfates materials damage study. Final report no. ES-812, for USEPA contract no. 68-02-2943. Geomet, Inc.: Gaithersburg, Maryland.
- Merry, C.J. and P.J. LaPotin (1985a) An analysis of the Revere, Quincy and Stamford structure data bases for predicting building material distribution. U.S. Army Cold Regions Research and Engineering Laboratory, Special Report 85-7.
- Merry, C.J. and P.J. LaPotin (1985b) A description of the building materials data base for New Haven, Connecticut. U.S. Army Cold Regions Research and Engineering Laboratory, Special Report 85-19.
- Merry, C.J. and P.T. LaPotin (in prep.) A description of the building materials data base for Portland, Maine. U.S. Army Cold Regions Research and Engineering Laboratory. Special Report.
- Mitchell, W.B., S.C. Guptill, K.E. Anderson, R.G. Fegeas and C.A. Hallam (1977) GIRAS: A geographic information retrieval and analysis system for handling land use and land cover data. U.S. Geological Survey, Professional Paper 1059.
- Nie, N.H., C.H. Hull, J.G. Jenkins, K. Steinbrenner and D.H. Bent (1975) SPSS, Statistical Package for the Social Sciences, 2nd Ed. New York: McGraw-Hill Book Company.
- Rosenfield, G.H. (1984) Spatial sample design for building materials inventory for use with an acid rain damage survey. Proceedings of the 22nd Annual Conference of the Urban and Regional Information Systems Association, 12-15 August, Seattle, Washington. The Changing Role of Computers in Public Agencies. (R. Schmidt and H. Smolin, Ed.), pp. 502-512.
- Snedecor, G.R. and W.G. Cochran (1980) Statistical Methods. Ames: Iowa State University Press.
- TRC Environmental Consultants, Inc. (1983) Air pollution damage to man-made materials: physical and economic estimates. Palo Alto, California: Electric Power Research Institute.
- U.S. Bureau of Census (1980) 1980 census of population and housing: census tracts. Pittsburgh, Pennsylvania, SMSA.

APPENDIX A: DATA

Listing of UTM coordinates for each sample point

	<u>UTM East</u>	<u>UTM North</u>	<u>CENS</u>	<u>LU</u>		<u>UTM East</u>	<u>UTM North</u>	<u>CENS</u>	<u>LU</u>
1.	583880.	4477130.	101	17	76.	583510.	4477580.	2205	12
2.	583870.	4477120.	101	17	77.	584090.	4477551.	2205	12
3.	583760.	4477090.	101	17	78.	583710.	4477529.	2205	12
4.	584070.	4477030.	101	12	79.	583990.	4477511.	2205	12
5.	584231.	4477020.	101	12	80.	584169.	4477509.	2205	12
6.	584540.	4477020.	101	12	81.	584060.	4477471.	2205	12
7.	584190.	4476979.	101	12	82.	583451.	4477450.	2205	12
8.	584580.	4476911.	101	12	01.	586590.	4476610.	102	12
9.	584490.	4476879.	101	12	02.	586250.	4476530.	102	12
10.	584290.	4476850.	101	12	03.	586440.	4478270.	202	11
11.	584620.	4476810.	101	12	04.	585621.	4477831.	202	13
12.	584460.	4476781.	101	12	05.	585550.	4477681.	202	12
13.	584870.	4476780.	101	12	06.	585400.	4477630.	202	13
14.	584261.	4476770.	101	12	07.	585710.	4477220.	302	12
15.	584290.	4476719.	101	12	08.	586230.	4477180.	305	11
16.	585060.	4476720.	101	12	09.	588710.	4478039.	403	12
17.	584810.	4476710.	101	12	10.	588191.	4477630.	403	12
18.	584670.	4476700.	101	12	11.	588610.	4477320.	403	12
19.	584990.	4476700.	101	12	12.	589100.	4477360.	404	12
20.	584790.	4476640.	101	12	13.	588980.	4477270.	404	12
21.	585140.	4476621.	101	12	14.	587660.	4476191.	408	13
22.	584859.	4476580.	101	12	15.	588130.	4475851.	408	13
23.	584730.	4476550.	101	12	16.	590441.	4478639.	702	11
24.	585200.	4476540.	101	12	17.	589690.	4478551.	702	12
25.	584891.	4476460.	101	12	18.	588930.	4478809.	803	12
26.	585000.	4476440.	101	12	19.	589290.	4478480.	803	12
27.	585060.	4476389.	101	14	20.	588990.	4478410.	803	12
28.	584940.	4476320.	101	12	21.	589520.	4478699.	804	12
29.	585060.	4476251.	101	14	22.	591020.	4479941.	1110	11
30.	585000.	4477510.	201	12	23.	593910.	4481299.	1201	12
31.	585150.	4477431.	201	12	24.	593490.	4480899.	1201	12
32.	585280.	4477379.	201	12	25.	593550.	4480490.	1201	11
33.	585120.	4477340.	201	12	26.	587929.	4475399.	1601	13
34.	584960.	4477330.	201	12	27.	585951.	4475459.	1702	12
35.	584569.	4477280.	201	12	28.	582650.	4478150.	2106	12
36.	585001.	4477270.	201	12	29.	582279.	4478030.	2106	12
37.	584450.	4477209.	201	12	30.	581430.	4480099.	2704	12
38.	584930.	4477210.	201	12	31.	578070.	4474880.	2805	13
39.	584270.	4477200.	201	12	32.	578759.	4474840.	2805	12
40.	584330.	4477199.	201	12	33.	578900.	4474560.	2805	12
41.	584790.	4477199.	201	12	34.	602190.	4488050.	4172	13
42.	585430.	4477180.	201	14	35.	566210.	4491710.	4480	16
43.	585090.	4477160.	201	12	36.	566130.	4491701.	4480	16
44.	584660.	4477151.	201	12	37.	566311.	4490881.	4480	13
45.	585120.	4477141.	201	12	38.	572460.	4485211.	4610	11
46.	584350.	4477110.	201	12	39.	573520.	4484699.	4610	13
47.	585110.	4477090.	201	12	40.	574700.	4484471.	4610	13
48.	584840.	4477080.	201	12	41.	578480.	4481860.	4621	14
49.	585360.	4477040.	201	14	42.	578450.	4481729.	4621	14
50.	584640.	4477000.	201	12	43.	579300.	4481460.	4621	13
51.	584830.	4477000.	201	12	44.	579670.	4481039.	4621	13
52.	585180.	4477001.	201	12	45.	579820.	4480229.	4637	12
53.	585210.	4476960.	201	14	46.	580119.	4479619.	4637	13
54.	585360.	4476940.	201	12	47.	578419.	4470820.	4703	16
55.	584880.	4476919.	201	12	48.	576850.	4470780.	4703	12
56.	585020.	4476901.	201	12	49.	578060.	4470651.	4703	16
57.	584820.	4476880.	201	12	50.	577119.	4471279.	4710	12
58.	585149.	4476811.	201	12	51.	576540.	4471180.	4710	14
59.	584450.	4477960.	2205	12	52.	592520.	4473751.	4831	13
60.	584200.	4477899.	2205	12	53.	592720.	4473570.	4831	11
61.	584690.	4477830.	2205	13	54.	597570.	4470371.	4867	13
62.	584060.	4477809.	2205	12	55.	597510.	4469901.	4867	11
63.	584530.	4477800.	2205	13	56.	595890.	4461689.	4923	13
64.	583890.	4477750.	2205	12	57.	596030.	4461220.	4923	13
65.	584360.	4477750.	2205	13	58.	600050.	4471520.	5080	16
66.	583810.	4477730.	2205	12	59.	601149.	4471329.	5080	11
67.	584599.	4477721.	2205	13	60.	598920.	4473070.	5100	11
68.	583461.	4477710.	2205	12	61.	598819.	4472379.	5100	13
69.	584200.	4477691.	2205	13	62.	596090.	4473340.	5136	11
70.	584370.	4477671.	2205	13	63.	596600.	4472560.	5136	11
71.	584249.	4477651.	2205	13	64.	595600.	4472659.	5137	12
72.	583910.	4477640.	2205	12	65.	596209.	4472000.	5137	13
73.	584590.	4477639.	2205	13	66.	594800.	4473660.	5140	13
74.	583600.	4477599.	2205	12	67.	595560.	4473660.	5140	11
75.	583760.	4477589.	2205	12	68.	595229.	4473380.	5140	12

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72. 597960.	4464891.	5516	13
73. 596280.	4466520.	5521	12
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75. 561620.	4505110.	6020	13
76. 562160.	4505111.	6020	12
77. 562130.	4504950.	6020	13
78. 561111.	4505710.	6021	12
79. 560640.	4505361.	6021	13
80. 560450.	4505330.	6021	13
81. 560700.	4504839.	6034	12
82. 560930.	4504299.	6034	12
83. 561631.	4504269.	6034	13
84. 565810.	4493241.	6041	11
85. 565060.	4492519.	6041	13
86. 565380.	4491850.	6041	13
87. 565321.	4494759.	6042	13
88. 565100.	4494241.	6042	12
89. 564050.	4496679.	6043	13
90. 564501.	4496270.	6043	13
91. 562390.	4495400.	6043	12
92. 564380.	4493919.	6043	13
93. 570989.	4459171.	7414	12
94. 570690.	4459159.	7414	12
95. 570940.	4457959.	7414	13
96. 597440.	4448520.	7751	12
97. 597370.	4447530.	7751	13
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99. 593810.	4443460.	7831	14
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02. 588670.	4475860.	407	11
03. 586741.	4477661.	501	11
04. 586500.	4477449.	501	11
05. 586920.	4477370.	501	11
06. 588240.	4478251.	506	11
07. 587970.	4478100.	506	11
08. 587579.	4477760.	508	11
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10. 587000.	4478290.	509	11
11. 586790.	4478860.	601	11
12. 587550.	4479061.	602	11
13. 587780.	4479529.	603	11
14. 589220.	4477879.	701	11
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16. 590191.	4478020.	703	11
17. 590860.	4478170.	706	11
18. 591640.	4478900.	707	11
19. 590330.	4479211.	807	11
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21. 590000.	4479589.	809	11
22. 589500.	4479180.	809	11
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24. 589050.	4481540.	1001	11
25. 592850.	4480080.	1203	11
26. 592050.	4479619.	1208	11
27. 590250.	4476980.	1401	11
28. 593380.	4477420.	1406	11
29. 592910.	4477120.	1406	17
30. 593210.	4474489.	1411	11
31. 584110.	4475820.	1904	11
32. 582540.	4474571.	1906	11
33. 583770.	4470749.	1910	11
34. 581660.	4477080.	2007	11
35. 581660.	4473950.	2010	11
36. 582240.	4473040.	2010	11
37. 581140.	4472550.	2010	11
38. 582089.	4476001.	2016	11
39. 581500.	4474690.	2016	11
40. 584090.	4479170.	2506	11
41. 583900.	4481880.	2607	11
42. 584720.	4480421.	2610	11
43. 582130.	4482201.	2702	11
44. 581990.	4481920.	2702	11
45. 578110.	4478170.	2808	11
46. 577620.	4478009.	2808	11
47. 586530.	4472210.	2902	11
48. 585980.	4470730.	2903	11
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55. 579640.	4480270.	4638	12
56. 579280.	4473130.	4705	11
57. 580990.	4467890.	4734	11
58. 587549.	4469790.	4782	11
59. 584260.	4466671.	4801	11
60. 586790.	4466141.	4801	11
61. 593150.	4473560.	4841	11
62. 600079.	4473859.	5091	11
63. 597100.	4473149.	5128	17
64. 595420.	4474859.	5151	11
65. 594661.	4475459.	5152	11
66. 593930.	4474180.	5153	13
67. 598030.	4467280.	5507	11
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70. 568970.	4456410.	7441	13
71. 591660.	4449430.	7731	17
72. 616299.	4465160.	8028	11
73. 623820.	4461750.	8041	12
74. 592530.	4481750.	1106	11
75. 591201.	4481689.	1106	11
76. 592130.	4480881.	1106	11
77. 594080.	4479960.	1202	11
78. 592840.	4480569.	1203	11
79. 591990.	4479200.	1208	11
80. 593410.	4479540.	1301	11
81. 594319.	4479321.	1305	11
82. 595069.	4478849.	1305	11
83. 590310.	4477340.	1401	11
84. 590290.	4476889.	1401	11
85. 591760.	4477380.	1403	11
86. 592150.	4476931.	1403	17
87. 591681.	4477770.	1404	11
88. 591829.	4477670.	1404	11
89. 593500.	4477860.	1405	12
90. 592960.	4477930.	1406	11
91. 593630.	4477530.	1406	11
92. 593090.	4477151.	1406	17
93. 589720.	4474501.	1501	11
94. 590870.	4473300.	1503	11
95. 589391.	4475320.	1506	11
96. 587300.	4475060.	1602	11
97. 587210.	4475051.	1602	11
98. 587001.	4474560.	1602	11
99. 585161.	4475599.	1703	11
100. 586340.	4475230.	1703	11
101. 584660.	4475880.	1801	13
102. 582320.	4477080.	1901	11
103. 582610.	4476830.	1901	11
104. 583760.	4475929.	1903	11
105. 583530.	4475810.	1903	11
01. 584569.	4472571.	1908	11
02. 586060.	4470171.	3202	11
03. 607270.	4496570.	4012	11
04. 585770.	4500591.	4080	21
05. 588009.	4498671.	4080	11
06. 589339.	4497850.	4080	11
07. 586940.	4497199.	4080	11
08. 578440.	4499250.	4100	11
09. 572970.	4495740.	4120	21
10. 575840.	4495709.	4120	21
11. 576780.	4493220.	4120	21
12. 582350.	4490380.	4133	11
13. 595289.	4488689.	4220	11
14. 586899.	4483041.	4266	11
15. 565840.	4489471.	4490	12
16. 571670.	4484449.	4503	11
17. 574620.	4482380.	4600	11
18. 576300.	4481301.	4600	11
19. 578440.	4469230.	4736	11
20. 578500.	4466480.	4741	11
21. 579040.	4463701.	4741	11
22. 576580.	4464431.	4742	21
23. 582300.	4466370.	4751	11
24. 580000.	4465410.	4752	11
25. 580230.	4464089.	4752	11
26. 579840.	4462650.	4753	21

UTM East	UTM North	CENS	LU	UTM East	UTM North	CENS	LU
27. 581960.	4461000.	4753	11	06. 582899.	4496520.	4090	21
28. 583661.	4465460.	4754	21	07. 575920.	4500870.	4110	21
29. 584260.	4464930.	4754	17	08. 578840.	4485611.	4370	11
30. 583330.	4463190.	4754	11	09. 574000.	4491070.	4380	21
31. 582330.	4461961.	4754	11	10. 567591.	4483470.	4513	11
32. 583760.	4468059.	4771	11	11. 567240.	4481041.	4513	21
33. 585870.	4466901.	4772	11	12. 564379.	4482169.	4520	14
34. 587500.	4466699.	4802	11	13. 568089.	4476670.	4530	21
35. 586800.	4472220.	4803	11	14. 566730.	4470020.	4560	11
36. 588660.	4470990.	4804	11	15. 569500.	4466300.	4560	21
37. 588510.	4469999.	4804	11	16. 575750.	4465830.	4560	21
38. 592220.	4472449.	4823	11	17. 593760.	4453671.	4950	21
39. 593670.	4470680.	4845	11	18. 600401.	4487060.	5261	17
40. 593131.	4469709.	4883	11	19. 602190.	4485030.	5261	14
41. 594990.	4468379.	4883	11	20. 552071.	4519870.	6005	11
42. 595889.	4469060.	4884	11	21. 554920.	4515510.	6005	13
43. 596240.	4468531.	4884	11	22. 552340.	4513120.	6007	11
44. 592730.	4468190.	4885	11	23. 560610.	4512500.	6017	21
45. 588030.	4464190.	4890	11	24. 571340.	4513511.	6018	21
46. 584520.	4459300.	4900	21	25. 568460.	4513280.	6018	21
47. 591970.	4462880.	4912	11	26. 565810.	4513080.	6018	21
48. 601410.	4462321.	4962	11	27. 570840.	4512230.	6018	21
49. 600610.	4461849.	4962	11	28. 567770.	4510430.	6018	14
50. 599580.	4460460.	4962	11	29. 564929.	4510099.	6018	21
51. 594340.	4463770.	4994	11	30. 566599.	4504050.	6018	21
52. 595700.	4475080.	5170	11	31. 555530.	4506099.	6026	21
53. 597070.	4476871.	5190	11	32. 568760.	4502079.	6038	21
54. 602120.	4475130.	5212	11	33. 553800.	4465820.	7137	21
55. 604390.	4476290.	5213	11	34. 572070.	4461500.	7413	11
56. 594380.	4480911.	5231	11	35. 574280.	4454780.	7452	21
57. 598390.	4485350.	5251	11	36. 573310.	4451051.	7452	21
58. 604700.	4481749.	5262	11	37. 580300.	4457619.	7463	21
59. 595010.	4466780.	5522	11	38. 580000.	4456500.	7463	21
60. 556130.	4512921.	6009	11	39. 570600.	4447029.	7552	21
61. 563390.	4506190.	6019	21	40. 566790.	4445360.	7552	21
62. 560480.	4500190.	6032	21	41. 578980.	4455021.	7711	21
63. 561009.	4496361.	6046	11	42. 585609.	4449869.	7747	21
64. 564170.	4451471.	7421	12	43. 590230.	4448600.	7747	11
65. 568160.	4453530.	7451	21	44. 588929.	4444921.	7817	21
66. 575810.	4462160.	7461	17	45. 592300.	4436439.	7921	21
67. 559480.	4450099.	7511	11	46. 589670.	4430870.	7947	21
68. 561039.	4446170.	7512	11	47. 611050.	4498100.	8012	21
69. 565630.	4444031.	7527	21	48. 616210.	4499210.	8013	11
70. 584361.	4440480.	7640	11	49. 631180.	4475100.	8018	21
71. 618980.	4465970.	8025	11	50. 631900.	4472070.	8019	21
72. 606520.	4464370.	8033	11	51. 627399.	4468480.	8019	21
73. 610780.	4463280.	8035	21	52. 620430.	4475150.	8020	21
74. 622920.	4458460.	8045	11	53. 614199.	4477980.	8021	21
75. 625260.	4456999.	8045	21	54. 614840.	4472640.	8023	21
76. 621030.	4459980.	8047	21	55. 614370.	4472249.	8023	21
77. 612920.	4460860.	8048	14	56. 621681.	4468910.	8038	21
78. 593769.	4445499.	8054	11	57. 625951.	4467310.	8038	21
79. 638630.	4464150.	8078	11	58. 614169.	4455810.	8049	21
80. 606950.	4492640.	8010	11	59. 611949.	4454420.	8050	21
81. 608670.	4495750.	8011	11	60. 602300.	4448030.	8059	21
82. 612640.	4466429.	8029	11	61. 606061.	4445219.	8059	21
83. 604760.	4465860.	8033	11	62. 605900.	4453260.	8061	21
84. 607060.	4464161.	8034	11	63. 609290.	4449860.	8061	21
85. 606180.	4462880.	8034	11	64. 620720.	4442651.	8065	21
86. 609910.	4462289.	8035	21	65. 617161.	4440460.	8065	21
87. 608689.	4461340.	8035	21	66. 620730.	4440281.	8065	13
88. 622210.	4465151.	8037	21	67. 618350.	4449230.	8066	21
89. 627791.	4461699.	8045	11	68. 621320.	4447570.	8066	21
90. 623150.	4456480.	8045	21	69. 627090.	4451941.	8071	11
91. 620049.	4460020.	8047	11	70. 635951.	4460060.	8072	14
92. 618850.	4458851.	8047	21	71. 628411.	4459580.	8072	21
93. 620080.	4458120.	8047	21	72. 629581.	4457799.	8072	21
94. 619571.	4461661.	8048	21	73. 629120.	4455360.	8072	21
95. 615070.	4461250.	8048	21	74. 628500.	4455311.	8072	21
96. 612070.	4461090.	8048	11	1. 571509.	4492970.	4400	21
97. 614950.	4459779.	8048	21	2. 548010.	4514259.	6006	21
98. 595971.	4443609.	8055	11	3. 548280.	4507509.	6006	21
99. 604700.	4451980.	8060	11	4. 543160.	4495120.	6029	21
100. 603789.	4451579.	8060	11	5. 544820.	4489950.	6029	21
101. 640240.	4464261.	8070	11	6. 556411.	4499560.	6031	21
102. 643919.	4466930.	8082	21	7. 542450.	4486809.	6050	21
01. 602070.	4496921.	4050	21	8. 554721.	4484919.	6050	21
02. 604090.	4502510.	4060	21	9. 548030.	4477590.	7110	21
03. 604890.	4500990.	4060	11	10. 548000.	4467631.	7110	21
04. 583490.	4501550.	4090	21	11. 541660.	4465570.	7110	21
05. 582410.	4500070.	4090	21	12. 546360.	4463189.	7110	21

<u>UTM East</u>	<u>UTM North</u>	<u>CENS</u>	<u>LI</u>
13. 549740.	4460210.	7210	21
14. 542590.	4459221.	7210	21
15. 550270.	4455730.	7210	21
16. 545239.	4455520.	7210	21
17. 549880.	4455401.	7210	21
18. 558380.	4464581.	7227	21
19. 562671.	4464410.	7227	21
20. 555810.	4462180.	7227	21
21. 555550.	4455809.	7227	21
22. 550730.	4448050.	7310	21
23. 555379.	4446100.	7310	21
24. 550090.	4444300.	7310	21
25. 541450.	4444149.	7310	21
26. 542660.	4442269.	7310	21
27. 549720.	4441609.	7310	21
28. 557670.	4440721.	7310	21
29. 544640.	4437899.	7310	21
30. 561300.	4441920.	7320	21
31. 562730.	4439750.	7320	21
32. 553220.	4436100.	7320	21
33. 558280.	4434781.	7320	21
34. 560699.	4433280.	7320	21
35. 544810.	4432730.	7320	21
36. 546560.	4431280.	7320	21
37. 550020.	4431239.	7320	21
38. 552229.	4428739.	7320	21
39. 565100.	4428640.	7320	21
40. 557400.	4427740.	7320	21
41. 545610.	4426420.	7320	21
42. 562800.	4453430.	7422	21
43. 566540.	4441420.	7557	21
44. 567850.	4436479.	7557	21
45. 565390.	4435140.	7557	21
46. 570960.	4432400.	7557	21

<u>UTM East</u>	<u>UTM North</u>	<u>CENS</u>	<u>LI</u>
47. 583230.	4448520.	7610	21
48. 583569.	4447111.	7610	21
49. 581550.	4444260.	7610	21
50. 575700.	4442849.	7610	21
51. 581330.	4441239.	7610	21
52. 574580.	4440530.	7610	21
53. 578420.	4440319.	7610	21
54. 580459.	4438461.	7610	21
55. 578889.	4435439.	7610	21
56. 582790.	4432469.	7620	21
57. 589680.	4438640.	7637	21
58. 609951.	4443479.	8062	21
59. 633310.	4453380.	8070	21
60. 631779.	4450061.	8070	21
61. 627750.	4448050.	8070	21
62. 631920.	4443510.	8070	21
63. 633240.	4471510.	8079	21
64. 634830.	4470321.	8079	21
65. 643860.	4469070.	8081	21
66. 643780.	4466351.	8081	11
67. 642289.	4464199.	8081	21
68. 656300.	4472689.	8083	11
69. 662020.	4465290.	8083	17
70. 657740.	4460741.	8083	21
71. 653720.	4462000.	8084	21
72. 654360.	4459469.	8084	21
73. 649290.	4458020.	8084	21
74. 656370.	4457340.	8084	11
75. 649960.	4455139.	8084	17
76. 645110.	4452371.	8084	21
77. 644330.	4448181.	8086	21
78. 646681.	4446940.	8086	21
79. 637679.	4444800.	8086	21

Building worksheet

1-4 _____ Tract/MCD
5 _____ Sampling frame
6-9 _____ Sample point number
9-10 _____ USGS land cover unit
11-12 _____ Building type:

Residential	
1 unit ¹	Office ⁸
2 units ²	Commercial ⁹
3-4 units ³	Industrial ¹⁰
5-9 units ⁴	Educational ¹¹
10-19 units ⁵	Religious ¹²
20-49 units ⁶	Health ¹³
> 50 units ⁷	Farm ¹⁴
	Other (_____) ¹⁵
	Cannot identify ¹⁶

Sketch of Building

___ WINDOWS ● ___ = ___ :
___ WINDOWS ● ___ = ___ :
___ WINDOWS ● ___ = ___ :
___ WINDOWS ● ___ = ___ :

ESTIMATED QUANTITIES OF BUILDING MATERIALS

FIRST STORY

ALL STORIES ABOVE 1st

SIDE 1:

SIDE 2:

SIDE 3:

SIDE 4:

10-16	_____	Age of building
10-16	_____	Height (ft)
10-21	_____	Side 1 (ft)
22-24	_____	Side 2 (ft)
26-27	_____	Lot size, side 1 (ft)
28-30	_____	Lot size, side 2 (ft)
31-32	_____	Exposed walls in footprint (ft)

Photo ID _____

Street address _____

SPECIAL NOTES/SKETCH:

ROOFS

- 44 _____ Material: 1 asphalt shingle, 2 wood, 3 painted metal, 4 bare galvanized, 5 tile, 6 slate, 7 copper, 8 other (_____), cannot identify⁹
- 45 _____ Sloped¹ or flat²
- 46-51 _____ Surface area (sq ft)

ROOF-MOUNTED APPARATUS

- 52 _____ Vents, flues, and stacks: painted, 1 bare galvanized, 2 bare aluminum, 3 other (_____), cannot identify⁴
- 53-54 _____ Number of items
- 55 _____ Skylights (framing): painted, 1 bare galvanized, 2 bare aluminum, 3 other (_____), cannot identify⁴
- 56-57 _____ Number of skylights
- 58 _____ Flashing: painted, 1 bare galvanized, 2 bare aluminum, 3 other (_____), cannot identify⁴
- 59-61 _____ Area (sq ft)

CHIMNEYS

- 62 _____ Material: painted, 1 brick, 2 stone, 3 other (_____), cannot identify⁴
- 63-66 _____ Exposed surface area (sq ft)

RAIN GUTTERS

- 67 _____ Material: painted, 1 bare galvanized, 2 vinyl, 3 copper, 4 other (_____), cannot identify⁵
- 68-70 _____ Length (ft)

DOWNSPOUTS

- 71 _____ Material: painted, 1 bare galvanized, 2 vinyl, 3 copper, 4 other (_____), cannot identify⁵
- 72-74 _____ Length (ft)

FENCES

- 75 _____ Material: 1 bare galvanized chain link, 2 bare galvanized stock, 3 painted, 4 brick, 5 concrete block, 6 field stone, 7 bare wood, 8 other (_____), cannot identify⁹
- 76-78 _____ Length (ft)
- 79-80 _____ Height (ft)

	Wall area (%)				Wall area (%)		
	Foundation	1st story	All stories above 1st		Foundation	1st story	All stories above 1st
Painted walls				12. Brick			
1. Wood (excl. stained)				13. Block			
2. Steel				14. Field stone			
3. Aluminum				15. Marble			
4. Masonry				16. Limestone			
5. Concrete				17. Granite			
6. Stucco				18. Glass			
7. Other (_____)				19. Vinyl			
8. Cannot identify				20. Other (_____)			
Bare walls				21. Cannot identify			
9. Wood (incl. stained)							
10. Galvanized steel							
11. Concrete							
				Total	100	100	100

Procedures used to check the data

The data were checked several ways to ensure that the data base was correct. A major check of the material type percentages and the EWIF value was done before printing a frequency run of the entire data set.

The percentage check was done by summing the percentage of material types for the three stories of the building. We needed to ensure that the sum of all material types was 100%. Also, during the same computer run, we checked to see that every building had a foundation. (In some cases, the field team had not recorded a foundation.) For these cases, the photograph of each building was examined to determine the material type of the foundation. We assumed 12 ft for the first story component of the building. In addition, during the same computer run, we would print out cases where the building height was greater than 14 ft (assuming 2 ft for the foundation and 12 ft for the first story) and there were no percentages recorded for the second and above stories.

The EWIF value was compared against the lot size and the building side dimensions. A printout of these values was obtained for every building. We assumed that the building sides were the square root of the exposed roof area and would check to make sure that the EWIF was not larger than the building sides. There was also a check to ensure that the building was not larger than the lot size dimensions.

Several hand calculations were done for the building surface areas and compared against the computer-calculated surface areas. These values had to be consistent for different types of materials percentages for a given building.

The frequency runs were checked for a number of items. The number of downspouts had to be the same as the number of rain gutters.

The empty footprints were noted for each sampling frame and verified against the number of buildings expected for each sampling frame.

The tally of land use and census tract numbers also had to be correct for each sampling frame. The number of roof areas had to equal the number of buildings.

The number of cases had to be the same for a given accessory. For example, the number of material types and the surface area values had to be the same for the variables of roofs, fences, downspouts, rain gutters and roof-mounted apparatus. Although not every building had all these compon-

ents, if the value was recorded, then each material type had to have a corresponding surface area.

Strange or unexpected numbers for all the variables were always doublechecked against the building worksheets. For example, the EWIF values were always fairly even in value or divisible by 5. Any unusual numbers or large numbers were doublechecked, not only for the EWIF, but for the other variables as well.

APPENDIX B. LISTING OF PROGRAM FOR DETERMINING THE FOOTPRINT SIZE FOR EACH SAMPLING FRAME

```

program FootSize (input, output);
(Footsize is a simple program for calculating footprint size for other)
[sampling frames based on some assumptions placed in the UCBD. The]
[following assumption pertain to the UCBD :]
(1. The sample size will be 107, allowing for empty footprints in 35% of)
[the sampled locations.]
(2. The alpha or proportionality coefficient, used to scale the remaining)
[sampling frames will be set to ensure that 30% of the spacial area ]
[remains open in the UCBD]

const
    size = 107;                [sample size in the UCBD]
    frames = 6;                (* of sampling frames)
    alpha = 0.046752;          [proportionality coefficient derived]
                                [from the 30% open area in the UCBD]

[density coefficients by SFrame location...change these for each city]

dUCBD = 5.2e-5;
dULIC = 7.2e-5;
dUMFR = 11.7e-5;
dUSFR = 2.16e-5;
dNSUB = 0.37e-5;
dNRUR = 0.109e-5;

(*****)

var
    footFt, footM : integer;    [footprint size in both Feet and Meters]
    Alabel : str255;            [A labeler for the sampling frames]
    i : integer;                [some counter variable OK?]

function density (frame : integer) : real;
(A simple function to return the density values to the main loop, it also)
[sets a labeler to be used in the final output table.]
begin
    case frame of
        1 :
            begin
                density := dUCBD;
                Alabel := 'UCBD';
            end;
        2 :

```

```

begin
  density := dULIC;
  Alabel := 'ULIC: ';
end;
3:
begin
  density := dUMFR;
  Alabel := 'UMFR: ';
end;
4:
begin
  density := dUSFR;
  Alabel := 'USFR: ';
end;
5:
begin
  density := dNSUB;
  Alabel := 'NSUB: ';
end;
6:
begin
  density := dNRUR;
  Alabel := 'NRUR: ';
end;
otherwise
end; (Case frame of)
end,[Adensity)

```

begin (main)

(Label the simple table and calculate the footprint sizes, first in feet)
 (and then in meters. Print back out the label,density, and footprint)
 (sizes on the current textport window)

```

writeln('    DENSITY    < FOOT>');
showText;

```

for i := 1 to frames do

begin

if density(i) > 0 then (check first to see if density > 0)

begin

footFt := round(sqrt(alpha * size / density(i)));

footM := round(sqrt((alpha * size / density(i)) / 10.76));

writeln(Alabel, density(i) : 5, footFt : 5, 'ft', footM : 5, 'm');

```

end
else
    writeln(Alabel, 'undef   undef undef ');
end;
end.

```

	DENSITY	FOOT	
UCBD:	5.2e-5	310ft	95m
ULIC:	7.2e-5	264ft	80m
UMFR:	1.2e-4	207ft	63m
USFR:	2.2e-5	481ft	147m
NSUB:	3.7e-6	1163ft	354m
NRUR:	1.1e-6	2142ft	653m

APPENDIX C: RESULTS OF THE FREQUENCY ANALYSIS

Description of the variables

<u>Variable name</u>	<u>Brief description</u>	<u>Detailed description</u>
LU	Land use designation	U.S. Geological Survey land use classification, where: 11 = residential, 12 = commercial and services, 13 = industrial, 14 = transportation, communications and utilities, 15 = industrial and commercial complexes, 16 = mixed urban or builtup land, 17 = other urban and or builtup land, 21 = cropland and pasture, 22 = orchard, groves, vineyards, nurseries and ornamental agricultural areas, 23 = confined feeding operations, 24 = other agricultural land, 31 = herbaceous rangeland, 32 = shrub and brush rangeland, 33 = mixed rangeland, 41 = deciduous forestland, 42 = evergreen forestland, 43 = mixed forestland, 51 = streams and canals, 52 = lakes, 53 = reservoirs, 54 = bays and estuaries, 61 = forested wetland, 62 = nonforested wetland, 71 = dry salt flats, 72 = beaches, 73 = sandy areas other than beaches, 74 = bare exposed rock, 75 = strip mines, quarries, and gravel pits, 76 = transitional areas, 77 = mixed barren land.
SFRAME	Sampling frame	Sampling frame, see Figure 2, where: 1 = UCBD 2 = ULIC 3 = UMFR 4 = USFR 5 = NSUB 6 = NRUR
SPOINT	Sample point number	Sampling point number within sampling frame.
TRACT	Census tract	Census tract number, see Figure 4.
POP	Tract population	Total population in census tract.
DU	Total dwelling units in tract	Total number of housing units in census tract.
U1	One unit structures in tract	Number of dwelling units in one-unit structures in census tract.
ABNR	Area of built non-residential	Land area of census tract in built non-residential, millions of ft ² .
ABR	Area of built residential	Land area of census tract in built residential, millions of ft ² .
AO	Area, open land without buildings	Land area of census tract in open without buildings, millions of ft ² .
AOB	Area, open land with buildings	Land area of census tract in open with buildings, millions of ft ² .
AGE	Approx. age of structure	Approximate age of the building. 1900 is the base year (year 0). To obtain age, add the value to 1900. Ages less than 1900 are coded as negative values.

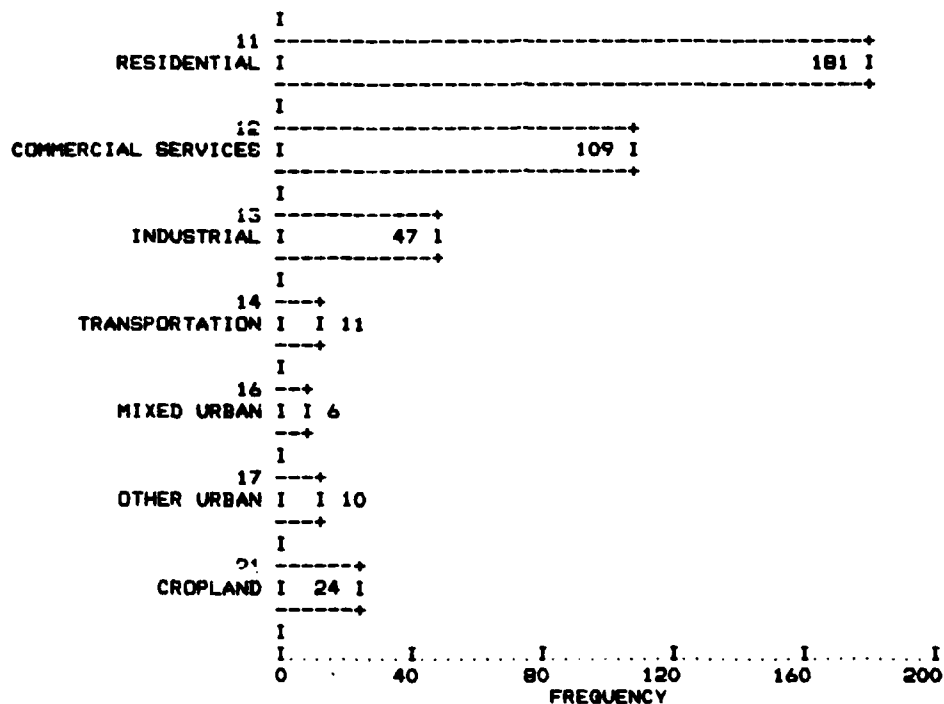
EWIF	Exposed wall in footprint	Exposed walls within a given footprint, ft.
HT	Average wall height	Average building height, ft.
LOT1	Lot size, side one	Lot size of one side associated with sampling point, ft.
LOT2	Lot size, side two	Lot size of the other side associated with sampling point, ft.
NBUILD	Number of buildings in footprint	The total number of buildings within the footprint.
SIDE1	Side one of building	Dimensions of one side of the building, ft.
SIDE2	Side two of building	Dimensions of the other side of the building, ft.
TYPE	Structure type-usage	Value label assigned to structure, where: 0 = no building, 1 = 1 housing unit, 2 = 2 housing units, 3 = 3 to 4 housing units, 4 = 5 to 9 housing units, 5 = 10 to 19 housing units, 6 = 20 to 49 housing units, 7 = 50 or more housing units, 8 = office buildings, 9 = commercial buildings, 10 = industrial buildings, 11 = educational building, 12 = religious building, 13 = health related buildings, 14 = farm, 15 = other buildings, 16 = cannot identify building.
APaint	Area of painted surface	The total surface area of the building containing painted materials, ft ² .
AMORT	Area of mortar-masonry surface	The total surface area of the building containing mortar and masonry materials, ft ² .
ASTONE	Area of stone surface	The total surface area of the building containing stone materials, ft ² .
AGALV	Area of galvanized surface	The total surface area of the building containing galvanized material, ft ² .
AOTHER	Area of other materials	The total surface area of the building containing all other materials, ft ² .
CAREA	Exposed chimney area	Exposed surface area of chimney above roof, ft ² .
CMAT	Chimney material	Chimney material type, where: 0 = no chimney observed, 1 = painted, 2 = brick, 3 = stone, 4 = other chimney material, and 9 = cannot identify chimney material.
ESAREA	Area of exposed roof	Exposed roof area of building, ft ² .
ERMAT	Roof material type	Exposed roof material, where: 0 = no roof observed, 1 = tar, 2 = asphalt shingle, 3 = wood, 4 = painted metal, 5 = bare galvanized, 6 = tile, 7 = slate, 8 = copper, 9 = other roof material, and 10 = cannot identify roof material.

SLOPE	Indicator of roof slope	Roof configuration: 0 = no roof observed, 1 = sloped, 2 = flat.
ITEM1	No. of vents, flues, stacks	Number of roof-mounted apparatus
ITEM2	No. of skylights	Number of skylights.
SKYM	Skylight material	Framing material type of skylights where: 0 = no framing material of skylights observed, 1 = painted, 2 = bare galvanized, 3 = bare aluminum, 4 = other material types, and 9 = cannot identify material type.
RMAT	Roof apparatus material	Material type of roof-mounted apparatus, where: 0 = no roof apparatus material, 1 = painted, 2 = bare galvanized, 3 = bare aluminum, 4 = other roof-mounted apparatus material, and 9 = cannot identify roof-mounted apparatus material.
FLMAT	Flashing material	Flashing material type, where: 0 = no flashing material observed, 1 = painted, 2 = bare galvanized, 3 = bare aluminum, 4 = other flashing material, and 9 = cannot identify flashing material.
FLAREA	Flashing area	Flashing surface area, ft ² .
RGMAT	Rain gutter material	Rain gutter material type, where: 0 = no rain gutters observed, 1 = painted, 2 = bare galvanized, 3 = vinyl, 4 = copper, 5 = other rain gutter material, and 9 = cannot identify rain gutter material.
RGLENGTH	Rain gutter length	Total length of rain gutters, ft.
DSPOUT	Material of downspout	Downspout material type, where: 0 = no downspout observed, 1 = painted, 2 = bare galvanized, 3 = vinyl, 4 = copper, 5 = other downspout material, and 9 = cannot identify downspout material.
DSLENG	Downspout length	Length of downspout, ft.
FENCE	Fence type	Fence material type, where: 0 = no fences observed, 1 = bare galvanized chain link, 2 = bare galvanized stock, 3 = painted fence, 4 = brick, 5 = concrete block, 6 = field stone, 7 = bare wood, 8 = other fence material, and 9 = cannot identify fence material.
FAREA	Fence area	Area of fence, ft ² .

Major classification variables

LU LAND USE DESIGNATION

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
RESIDENTIAL	11	181	46.6	46.6	46.6
COMMERCIAL SERVICES	12	109	28.1	28.1	74.7
INDUSTRIAL	13	47	12.1	12.1	86.9
TRANSPORTATION	14	11	2.8	2.8	89.7
MIXED URBAN	16	6	1.5	1.5	91.2
OTHER URBAN	17	10	2.6	2.6	93.8
CROPLAND	21	24	6.2	6.2	100.0
TOTAL		388	100.0	100.0	



LU LAND USE DESIGNATION

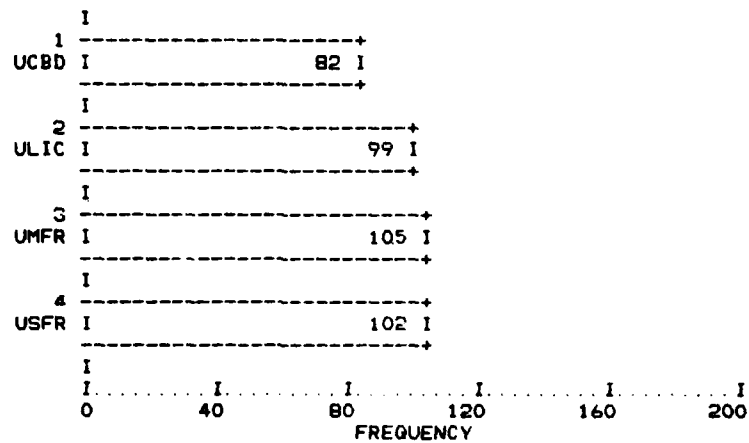
MEAN	12.459	STD ERR	.129	MEDIAN	12.000
MODE	11.000	STD DEV	2.532	VARIANCE	6.409
KURTOSIS	5.526	S E KURT	1.995	SKEWNESS	2.502
S E SKEW	.124	RANGE	10.000	MINIMUM	11.000
MAXIMUM	21.000	SUM	4834.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	11.000	25.00	11.000	33.30	11.000
50.00	12.000	66.70	12.000	75.00	13.000
90.00	16.000				

VALID CASES 388 MISSING CASES 0

SFRAME SAMPLING FRAME

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
UCBD	1	82	21.1	21.1	21.1
ULIC	2	99	25.5	25.5	46.6
UMFR	3	105	27.1	27.1	73.7
USFR	4	102	26.3	26.3	100.0
TOTAL		388	100.0	100.0	



MEAN	2.585	STD ERR	.055	MEDIAN	3.000
MODE	3.000	STD DEV	1.093	VARIANCE	1.194
KURTOSIS	-1.292	S E KURT	1.995	SKEWNESS	-.099
S E SKEW	.124	RANGE	3.000	MINIMUM	1.000
MAXIMUM	4.000	SUM	1003.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	1.000	25.00	2.000	33.30	2.000
50.00	3.000	66.70	3.000	75.00	4.000
90.00	4.000				

VALID CASES 388 MISSING CASES 0

SPGINT SAMPLE POINT NUMBER

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
1	4	1	1	36	4	1	37	71	4	1	73
2	4	1	2	37	4	1	38	72	4	1	74
3	4	1	3	38	4	1	39	73	4	1	75
4	4	1	4	39	4	1	40	74	4	1	76
5	4	1	5	40	4	1	41	75	4	1	77
6	4	1	6	41	4	1	42	76	4	1	78
7	4	1	7	42	4	1	43	77	4	1	79
8	4	1	8	43	4	1	44	78	4	1	80
9	4	1	9	44	4	1	45	79	4	1	81
10	4	1	10	45	4	1	46	80	4	1	82
11	4	1	11	46	4	1	47	81	4	1	84
12	4	1	12	47	4	1	48	82	4	1	85
13	4	1	13	48	4	1	49	83	3	1	85
14	4	1	14	49	4	1	51	84	3	1	86
15	4	1	15	50	4	1	52	85	3	1	87

SPCINT SAMPLE POINT NUMBER

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
16	4	1	16	51	4	1	53	86	3	1	88
17	4	1	18	52	4	1	54	87	3	1	88
18	4	1	19	53	4	1	55	88	3	1	89
19	4	1	20	54	4	1	56	89	3	1	90
20	4	1	21	55	4	1	57	90	3	1	91
21	4	1	22	56	4	1	58	91	3	1	91
22	4	1	23	57	4	1	59	92	3	1	92
23	4	1	24	58	4	1	60	93	3	1	93
24	4	1	25	59	4	1	61	94	3	1	94
25	4	1	26	60	4	1	62	95	3	1	95
26	4	1	27	61	4	1	63	96	3	1	95
27	4	1	28	62	4	1	64	97	3	1	96
28	4	1	29	63	4	1	65	98	3	1	97
29	4	1	30	64	4	1	66	99	3	1	98
30	4	1	31	65	4	1	67	100	2	1	98
31	4	1	32	66	4	1	68	101	2	1	99
32	4	1	33	67	4	1	69	102	2	1	99
33	4	1	34	68	4	1	70	103	1	0	99
34	4	1	35	69	4	1	71	104	1	0	100
35	4	1	36	70	4	1	72	105	1	0	100

SPCINT SAMPLE POINT NUMBER

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY .40 OCCURRENCES

20	3	*****
20	8	*****
20	13	*****
20	18	*****
20	23	*****
20	28	*****
20	33	*****
20	38	*****
20	43	*****
20	48	*****
20	53	*****
20	58	*****
20	63	*****
20	68	*****
20	73	*****
20	78	*****
17	83	*****
15	88	*****
15	93	*****
14	98	*****
7	103	*****



MEAN	49.410	STD ERR	1.457	MEDIAN	49.000
MODE	1.000	STD DEV	26.694	VARIANCE	823.359
KURTOSIS	-1.126	S E KURT	1.995	SKEWNESS	.067
S E SKEW	.124	RANGE	104.000	MINIMUM	1.000
MAXIMUM	105.000	SUM	19171.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	10.000	25.00	25.000	33.30	33.000
50.00	49.000	66.70	65.000	75.00	73.000
90.00	90.000				

VALID CASES 388 MISSING CASES 0

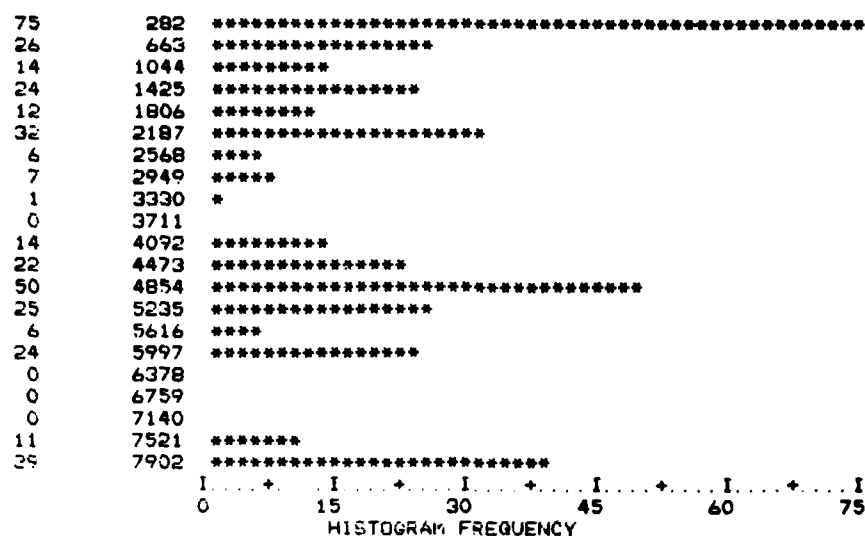
TRACT CENSUS TRACT

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
101	29	7	7	1601	1	0	35	4637	2	1	60
102	2	1	8	1602	3	1	36	4638	1	0	60
201	29	7	15	1702	1	0	36	4703	3	1	61
202	4	1	16	1703	2	1	37	4705	1	0	61
302	1	0	17	1801	1	0	37	4710	2	1	62
305	1	0	17	1901	2	1	37	4734	1	0	62
401	1	0	17	1903	2	1	38	4736	1	0	62
403	3	1	18	1904	1	0	38	4741	2	1	63
404	2	1	19	1906	1	0	38	4742	1	0	63
407	1	0	19	1908	1	0	39	4751	1	0	63
408	2	1	19	1910	1	0	39	4752	2	1	64
501	3	1	20	2007	1	0	39	4753	2	1	64
506	2	1	21	2010	3	1	40	4754	4	1	65
508	1	0	21	2016	2	1	40	4771	1	0	65
509	2	1	21	2106	2	1	41	4772	1	0	66
601	1	0	22	2205	24	6	47	4782	1	0	66
602	1	0	22	2506	1	0	47	4801	2	1	66
603	1	0	22	2607	1	0	48	4802	1	0	67
701	1	0	22	2610	1	0	48	4803	1	0	67
702	2	1	23	2702	2	1	48	4804	2	1	68
703	2	1	23	2704	1	0	49	4823	1	0	68
706	1	0	24	2805	3	1	49	4831	2	1	68
707	1	0	24	2808	2	1	50	4841	1	0	69
803	3	1	25	2902	1	0	50	4845	1	0	69
804	1	0	25	2903	1	0	51	4867	2	1	69
807	1	0	25	3202	1	0	51	4883	2	1	70
809	3	1	26	4012	1	0	51	4884	2	1	70
901	1	0	26	4080	4	1	52	4885	1	0	71
1001	1	0	27	4100	1	0	52	4890	1	0	71
1106	3	1	27	4120	3	1	53	4900	1	0	71
1110	1	0	28	4133	1	0	53	4912	1	0	71
1201	3	1	28	4172	1	0	54	4923	2	1	72
1202	1	0	29	4220	1	0	54	4962	3	1	73
1203	2	1	29	4250	1	0	54	4994	1	0	73
1208	2	1	30	4266	1	0	54	5080	2	1	73
1301	1	0	30	4311	1	0	55	5091	1	0	74
1305	2	1	30	4340	1	0	55	5100	2	1	74
1401	3	1	31	4350	1	0	55	5128	1	0	74
1403	2	1	32	4452	1	0	55	5136	2	1	75
1404	2	1	32	4480	3	1	56	5137	2	1	76
1405	1	0	32	4490	1	0	56	5140	3	1	76
1406	5	1	34	4503	1	0	57	5151	1	0	77
1411	1	0	34	4504	1	0	57	5152	1	0	77
1501	1	0	34	4600	2	1	57	5153	1	0	77
1503	1	0	35	4610	2	1	58	5170	1	0	77
1506	1	0	35	4621	4	1	59	5190	1	0	78

TRACT CENSUS TRACT

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
5212	1	0	78	6041	3	1	85	8025	1	0	92
5213	1	0	78	6042	2	1	86	8028	1	0	92
5231	1	0	78	6043	4	1	87	8029	1	0	93
5251	1	0	79	6046	1	0	87	8033	2	1	93
5252	2	1	79	7414	3	1	88	8034	2	1	94
5262	1	0	79	7421	1	0	88	8035	3	1	94
5507	1	0	80	7441	1	0	88	8037	1	0	95
5508	1	0	80	7451	1	0	89	8041	1	0	95
5516	2	1	80	7461	1	0	89	8045	4	1	96
5521	1	0	81	7511	1	0	89	8047	4	1	97
5522	1	0	81	7512	1	0	89	8048	5	1	98
6009	1	0	81	7527	1	0	90	8054	1	0	98
6013	1	0	81	7640	1	0	90	8055	1	0	99
6019	1	0	82	7731	1	0	90	8060	2	1	99
6020	4	1	83	7751	2	1	91	8078	2	1	100
6021	3	1	84	7831	2	1	91	8082	1	0	100
6032	1	0	84	8010	1	0	91				
6034	3	1	85	8011	1	0	92				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 1.50 OCCURRENCES



TRACT CENSUS TRACT

MEAN	3380.433	STD ERR	132.521	MEDIAN	2855.000
MODE	101.000	STD DEV	2610.363	VARIANCE	6813994.88
KURTOSIS	-1.159	S E KURT	1.995	SKENNESS	.299
S E SKEW	.124	RANGE	7981.000	MINIMUM	101.000
MAXIMUM	8082.000	SUM	1311608.00		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	201.000	25.00	804.750	33.30	1406.000
50.00	2855.000	66.70	4802.463	75.00	5136.750
90.00	7733.000				

VALID CASES 388 MISSING CASES 0

Census tract data

POP TRACT POPULATION

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
204.00	1	0	0	2065.00	1	0	40	3248.00	1	0	59
275.00	4	1	1	2069.00	1	0	40	3270.00	2	1	59
320.00	24	6	7	2075.00	1	0	41	3278.00	1	0	60
396.00	2	1	8	2087.00	3	1	41	3295.00	1	0	60
491.00	3	1	9	2090.00	1	0	42	3330.00	3	1	61
597.00	2	1	9	2105.00	3	1	43	3358.00	1	0	61
608.00	1	0	10	2156.00	2	1	43	3387.00	2	1	61
751.00	1	0	10	2173.00	1	0	43	3427.00	1	0	62
764.00	2	1	10	2183.00	1	0	44	3470.00	2	1	62
789.00	4	1	11	2212.00	2	1	44	3507.00	2	1	63
806.00	3	1	12	2276.00	1	0	44	3562.00	2	1	63
906.00	1	0	12	2320.00	1	0	45	3575.00	1	0	63
925.00	2	1	13	2367.00	1	0	45	3599.00	1	0	64
961.00	1	0	13	2416.00	1	0	45	3601.00	4	1	65
970.00	3	1	14	2421.00	2	1	46	3648.00	1	0	65
1034.00	29	7	21	2430.00	1	0	46	3658.00	2	1	65
1049.00	2	1	22	2493.00	2	1	46	3685.00	2	1	66
1120.00	1	0	22	2500.00	2	1	47	3732.00	5	1	67

1131.00	2	1	23	2501.00	1	0	47	3753.00	1	0	68
1141.00	1	0	23	2542.00	2	1	48	3761.00	1	0	68
1168.00	1	0	23	2556.00	1	0	48	3792.00	1	0	68
1264.00	1	0	23	2568.00	1	0	48	3796.00	1	0	68
1388.00	2	1	24	2588.00	3	1	49	3844.00	1	0	69
1416.00	3	1	25	2623.00	2	1	49	3847.00	1	0	69
1459.00	29	7	32	2630.00	2	1	50	3885.00	1	0	69
1512.00	1	0	32	2635.00	1	0	50	3904.00	3	1	70
1604.00	4	1	34	2753.00	1	0	51	3959.00	1	0	70
1606.00	2	1	34	2761.00	1	0	51	4011.00	4	1	71
1620.00	1	0	34	2814.00	1	0	51	4024.00	2	1	72
1652.00	1	0	35	2829.00	2	1	52	4042.00	1	0	72
1657.00	2	1	35	2839.00	1	0	52	4133.00	1	0	72
1685.00	1	0	35	2850.00	1	0	52	4156.00	1	0	72
1687.00	1	0	36	2862.00	1	0	52	4189.00	1	0	73
1727.00	1	0	36	2878.00	2	1	53	4190.00	1	0	73
1829.00	1	0	36	2892.00	3	1	54	4254.00	1	0	73
1870.00	1	0	36	2929.00	1	0	54	4258.00	1	0	73
1914.00	2	1	37	2953.00	1	0	54	4285.00	1	0	74
1918.00	2	1	37	2969.00	2	1	55	4390.00	2	1	74
1925.00	1	0	38	3008.00	2	1	55	4534.00	2	1	75
1930.00	1	0	38	3072.00	1	0	55	4547.00	1	0	75
1933.00	2	1	38	3086.00	3	1	56	4593.00	1	0	75
1945.00	1	0	39	3108.00	3	1	57	4648.00	1	0	76
1949.00	2	1	39	3112.00	1	0	57	4757.00	2	1	76
1962.00	1	0	39	3120.00	2	1	58	4759.00	3	1	77
1966.00	1	0	40	3187.00	2	1	58	4761.00	2	1	77
2010.00	1	0	40	3196.00	1	0	59	4780.00	1	0	78

POP TRACT POPULATION

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
4794.00	1	0	78	6135.00	3	1	84	7581.00	1	0	92
4827.00	1	0	78	6141.00	2	1	85	7749.00	4	1	93
4990.00	1	0	78	6196.00	1	0	85	7914.00	1	0	93
5004.00	1	0	79	6286.00	1	0	85	8515.00	4	1	94
5049.00	1	0	79	6449.00	3	1	86	8664.00	1	0	95
5166.00	1	0	79	6813.00	1	0	86	8768.00	1	0	95
5240.00	1	0	79	6834.00	3	1	87	8965.00	1	0	95
5278.00	3	1	80	6882.00	3	1	88	9515.00	5	1	96
5286.00	1	0	80	6903.00	1	0	88	9676.00	1	0	97
5473.00	1	0	81	6996.00	1	0	88	9936.00	2	1	97
5505.00	1	0	81	7029.00	1	0	89	10733.00	1	0	97
5552.00	3	1	82	7051.00	2	1	89	11434.00	4	1	98
5562.00	1	0	82	7142.00	3	1	90	11878.00	2	1	99
5721.00	2	1	82	7159.00	2	1	90	11972.00	1	0	99
6001.00	3	1	83	7230.00	1	0	91	13535.00	1	0	99
6121.00	1	0	84	7328.00	4	1	92	14257.00	2	1	100

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 2.00 OCCURRENCES

47	531	*****
79	1201	*****
43	1871	*****
34	2541	*****
40	3211	*****
40	3881	*****
20	4551	*****
14	5221	*****
13	5891	*****
11	6561	*****
15	7231	*****
6	7901	***
6	8571	***
6	9241	***
3	9911	**
1	10581	*
4	11251	**
3	11921	**
0	12591	
1	13261	*
2	13931	*

0 20 40 60 80 100
HISTOGRAM FREQUENCY

POP TRACT POPULATION

MEAN	3374.982	STD ERR	139.244	MEDIAN	2632.500
MODE	1034.000	STD DEV	2742.794	VARIANCE	7522917.73
KURTOSIS	1.862	S E KURT	1.995	SKENNESS	1.373
S E SKEW	.124	RANGE	14053.000	MINIMUM	204.000
MAXIMUM	14257.000	SUM	1309493.00		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10 00	762.700	25 00	1459.000	33 30	1604.000
50 00	2632.500	66 70	3732.000	75 00	4581.500
90 00	7159.000				
VALID CASES	388	MISSING CASES	0		

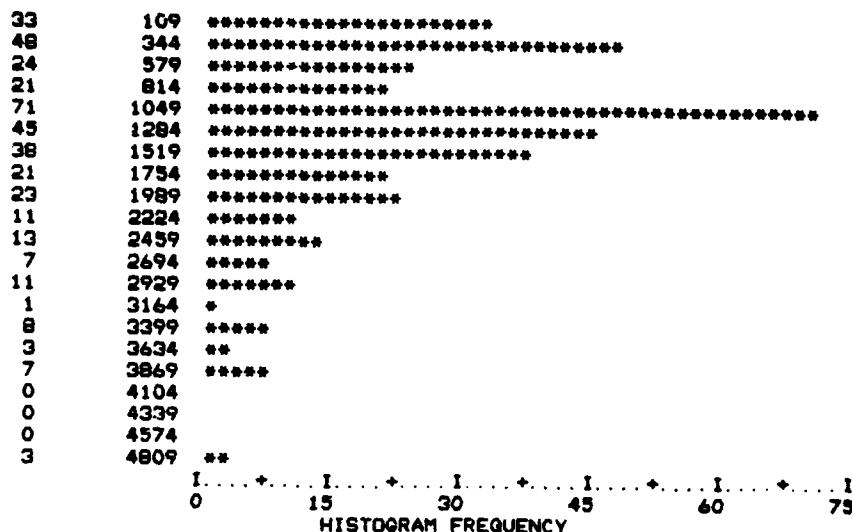
DU TOTAL DWELLING UNITS IN TRACT

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
1.00	4	1	1	950.00	2	1	34	1393.00	1	0	62
84.00	4	1	2	965.00	3	1	34	1404.00	1	0	63
117.00	1	0	2	968.00	1	0	35	1422.00	2	1	63
224.00	24	6	9	969.00	2	1	35	1430.00	1	0	63
241.00	2	1	9	977.00	1	0	35	1433.00	1	0	64
257.00	31	8	17	980.00	1	0	36	1442.00	1	0	64
286.00	4	1	18	983.00	1	0	36	1445.00	1	0	64
336.00	3	1	19	985.00	1	0	36	1472.00	5	1	65
386.00	3	1	20	997.00	1	0	36	1484.00	2	1	66
399.00	1	0	20	1006.00	3	1	37	1506.00	1	0	66
419.00	1	0	20	1009.00	2	1	38	1518.00	1	0	66
422.00	1	0	20	1024.00	30	8	45	1536.00	1	0	67
432.00	2	1	21	1026.00	2	1	46	1555.00	2	1	67
473.00	2	1	21	1105.00	2	1	46	1566.00	1	0	68
488.00	1	0	22	1111.00	1	0	47	1570.00	4	1	69
509.00	2	1	22	1118.00	1	0	47	1582.00	3	1	69
540.00	3	1	23	1135.00	2	1	47	1605.00	5	1	71
551.00	1	0	23	1138.00	1	0	48	1625.00	1	0	71
553.00	1	0	23	1139.00	2	1	48	1629.00	1	0	71
597.00	1	0	24	1144.00	3	1	49	1630.00	3	1	72
624.00	1	0	24	1154.00	5	1	50	1631.00	1	0	72
626.00	3	1	25	1163.00	2	1	51	1654.00	2	1	73
631.00	1	0	25	1174.00	2	1	51	1663.00	1	0	73
644.00	2	1	26	1175.00	1	0	52	1675.00	1	0	73
646.00	1	0	26	1178.00	1	0	52	1700.00	1	0	73
663.00	1	0	26	1190.00	2	1	52	1704.00	1	0	74
676.00	1	0	26	1194.00	2	1	53	1723.00	1	0	74
680.00	1	0	27	1195.00	2	1	53	1739.00	1	0	74
692.00	2	1	27	1197.00	1	0	54	1750.00	1	0	74
699.00	3	1	28	1200.00	3	1	54	1751.00	2	1	75
705.00	1	0	28	1203.00	2	1	55	1755.00	1	0	75
707.00	1	0	28	1207.00	1	0	55	1759.00	1	0	76
715.00	1	0	29	1221.00	4	1	56	1806.00	1	0	76
745.00	1	0	29	1229.00	1	0	56	1807.00	2	1	76
753.00	1	0	29	1262.00	1	0	57	1843.00	1	0	77
799.00	2	1	30	1263.00	3	1	57	1860.00	1	0	77
804.00	1	0	30	1279.00	2	1	58	1863.00	3	1	78
810.00	2	1	30	1294.00	1	0	58	1922.00	1	0	78
845.00	1	0	31	1305.00	3	1	59	1924.00	1	0	78
850.00	1	0	31	1306.00	3	1	60	1926.00	1	0	78
880.00	1	0	31	1325.00	4	1	61	1953.00	1	0	79
883.00	1	0	31	1332.00	1	0	61	1965.00	1	0	79
902.00	2	1	32	1340.00	1	0	61	1972.00	3	1	80
933.00	2	1	32	1361.00	1	0	62	1976.00	2	1	80
945.00	1	0	33	1362.00	1	0	62	1977.00	1	0	80
947.00	1	0	33	1364.00	1	0	62	1988.00	1	0	81

DU TOTAL DWELLING UNITS IN TRACT

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
1989.00	1	0	81	2310.00	1	0	86	2890.00	4	1	94
2004.00	1	0	81	2354.00	4	1	87	3023.00	1	0	94
2031.00	1	0	81	2373.00	1	0	88	3142.00	1	0	95
2039.00	1	0	82	2392.00	3	1	88	3326.00	1	0	95
2041.00	3	1	82	2456.00	2	1	89	3408.00	5	1	96
2054.00	1	0	83	2523.00	3	1	90	3477.00	1	0	96
2101.00	3	1	84	2634.00	1	0	90	3492.00	1	0	97
2107.00	2	1	84	2636.00	3	1	91	3645.00	1	0	97
2121.00	1	0	84	2651.00	1	0	91	3679.00	2	1	97
2185.00	1	0	85	2692.00	1	0	91	3799.00	2	1	98
2189.00	1	0	85	2747.00	1	0	91	3879.00	1	0	98
2196.00	2	1	85	2863.00	1	0	92	3928.00	4	1	99
2221.00	1	0	86	2887.00	4	1	93	4752.00	1	0	99
2234.00	2	1	86	2888.00	1	0	93	4917.00	2	1	100

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 1.50 OCCURRENCES



DU TOTAL DWELLING UNITS IN TRACT

MEAN	1319.923	STD ERR	47.522	MEDIAN	1154.000
MODE	257.000	STD DEV	936.070	VARIANCE	876227.916
KURTOSIS	1.354	S E KURT	1.995	SKEWNESS	1.102
S E SKEW	.124	RANGE	4916.000	MINIMUM	1.000
MAXIMUM	4917.000	SUM	512130.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	257.000	25.00	634.250	33.30	950.000
50.00	1154.000	66.70	1544.797	75.00	1754.000
90.00	2636.000				

VALID CASES 388 MISSING CASES 0

U1

ONE UNIT STRUCTURES IN TRACT

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
1.00	58	15	15	359.00	3	1	44	760.00	2	1	63
5.00	1	0	15	367.00	1	0	44	761.00	1	0	63
6.00	3	1	16	371.00	2	1	45	766.00	1	0	63
9.00	29	7	23	374.00	1	0	45	776.00	4	1	64
20.00	5	1	25	403.00	3	1	46	792.00	1	0	65
23.00	2	1	25	415.00	3	1	47	795.00	2	1	65
44.00	2	1	26	420.00	2	1	47	802.00	3	1	66
53.00	1	0	26	425.00	1	0	47	807.00	5	1	67
67.00	2	1	27	441.00	1	0	48	815.00	1	0	68
87.00	1	0	27	446.00	1	0	48	821.00	3	1	68
88.00	2	1	27	470.00	1	0	48	836.00	1	0	69
99.00	1	0	28	472.00	3	1	49	837.00	4	1	70
100.00	2	1	28	475.00	1	0	49	852.00	2	1	70
102.00	1	0	28	482.00	1	0	49	856.00	1	0	70
104.00	2	1	29	486.00	1	0	50	888.00	1	0	71
106.00	3	1	30	519.00	1	0	50	894.00	1	0	71
107.00	1	0	30	526.00	1	0	50	897.00	1	0	71
121.00	1	0	30	536.00	2	1	51	933.00	1	0	71
126.00	1	0	30	553.00	1	0	51	939.00	1	0	72
128.00	1	0	31	560.00	1	0	51	968.00	1	0	72
130.00	1	0	31	574.00	1	0	52	1033.00	2	1	72
137.00	3	1	32	576.00	2	1	52	1041.00	1	0	73
143.00	2	1	32	577.00	1	0	52	1062.00	2	1	73
154.00	2	1	33	579.00	1	0	53	1063.00	1	0	73
175.00	2	1	33	597.00	3	1	53	1072.00	1	0	74
178.00	2	1	34	604.00	2	1	54	1077.00	1	0	74
188.00	1	0	34	611.00	2	1	54	1084.00	3	1	75
197.00	4	1	35	625.00	1	0	55	1088.00	1	0	75
209.00	1	0	35	631.00	2	1	55	1090.00	1	0	75
212.00	4	1	36	633.00	2	1	56	1114.00	1	0	76
214.00	2	1	37	635.00	1	0	56	1166.00	3	1	76
220.00	2	1	37	642.00	3	1	57	1179.00	1	0	77
235.00	3	1	38	661.00	1	0	57	1191.00	1	0	77
237.00	1	0	38	666.00	3	1	58	1207.00	1	0	77
240.00	2	1	39	667.00	1	0	58	1212.00	1	0	77
268.00	2	1	39	678.00	1	0	58	1251.00	3	1	78
281.00	3	1	40	680.00	2	1	59	1259.00	1	0	78
293.00	2	1	41	681.00	2	1	59	1264.00	1	0	79
306.00	2	1	41	686.00	1	0	60	1282.00	1	0	79
307.00	2	1	42	693.00	1	0	60	1289.00	1	0	79
314.00	1	0	42	711.00	2	1	60	1291.00	1	0	79
322.00	1	0	42	714.00	3	1	61	1343.00	3	1	80
330.00	1	0	43	715.00	1	0	61	1360.00	1	0	80
331.00	1	0	43	724.00	1	0	62	1378.00	1	0	81
352.00	1	0	43	726.00	1	0	62	1391.00	1	0	81
353.00	1	0	43	744.00	2	1	62	1417.00	1	0	81

U1

ONE UNIT STRUCTURES IN TRACT

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
1439.00	1	0	81	1824.00	1	0	86	2298.00	1	0	94
1442.00	1	0	82	1859.00	2	1	86	2336.00	2	1	94
1453.00	1	0	82	1870.00	1	0	86	2339.00	4	1	95
1461.00	1	0	82	1902.00	2	1	87	2383.00	5	1	96
1486.00	1	0	82	1907.00	3	1	88	2485.00	1	0	97
1491.00	1	0	83	1921.00	1	0	88	2696.00	1	0	97
1556.00	1	0	83	1987.00	3	1	89	2763.00	1	0	97
1568.00	2	1	84	2016.00	1	0	89	2933.00	4	1	98
1575.00	1	0	84	2046.00	1	0	89	2968.00	1	0	98
1630.00	2	1	84	2078.00	7	2	91	3203.00	2	1	99
1631.00	1	0	85	2118.00	1	0	91	3452.00	1	0	99
1743.00	1	0	85	2182.00	4	1	92	3543.00	1	0	99
1761.00	1	0	85	2186.00	2	1	93	3722.00	2	1	100
1809.00	1	0	85	2200.00	2	1	93				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

127	82	*****
39	260	*****
29	438	*****
37	616	*****
41	794	*****
9	972	**
18	1150	*****
14	1328	****
11	1506	***
5	1684	*
11	1862	***
13	2040	***
9	2218	**
11	2396	***
1	2574	
2	2752	*
5	2930	*
0	3108	
2	3286	*
2	3464	*
2	3642	*

1 1 1 1 1 1 1
0 40 80 120 160 200
HISTOGRAM FREQUENCY

U1 ONE UNIT STRUCTURES IN TRACT

MEAN	745.299	STD ERR	41.727	MEDIAN	522.500
MODE	1.000	STD DEV	821.921	VARIANCE	675554.675
KURTOSIS	1.113	S E KURT	1.995	SKEWNESS	1.291
S E SKEW	.124	RANGE	3721.000	MINIMUM	1.000
MAXIMUM	3722.000	SUM	289176.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	1.000	25.00	23.000	33.30	176.611
50.00	522.500	66.70	807.000	75.00	1089.500
90.00	2078.000				

VALID CASES 388 MISSING CASES 0

ABNR AREA: BUILT NON-RESIDENTIAL

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0.0	43	11	11	13	2	1	27	48	1	0	47
.00	2	1	12	13	2	1	28	49	2	1	47
.00	1	0	12	14	1	0	28	52	1	0	48
.00	3	1	13	15	1	0	28	52	1	0	48
.00	1	0	13	15	1	0	29	53	1	0	48
.00	2	1	13	15	1	0	29	53	1	0	48
.00	1	0	14	17	1	0	29	53	1	0	49
.00	5	1	15	17	1	0	29	54	1	0	49
.00	1	0	15	18	1	0	30	55	24	6	55
.00	1	0	15	20	3	1	30	57	1	0	55
.00	1	0	16	20	2	1	31	58	3	1	56
.00	2	1	16	21	2	1	31	59	1	0	56
.01	1	0	16	22	2	1	32	61	29	7	64
.01	1	0	17	22	4	1	33	61	4	1	65
.01	3	1	18	22	2	1	34	61	2	1	65
.01	1	0	18	22	1	0	34	61	2	1	66
.01	1	0	18	23	1	0	34	63	2	1	66
.01	1	0	18	23	1	0	34	64	1	0	67
.01	1	0	19	23	1	0	35	65	1	0	67

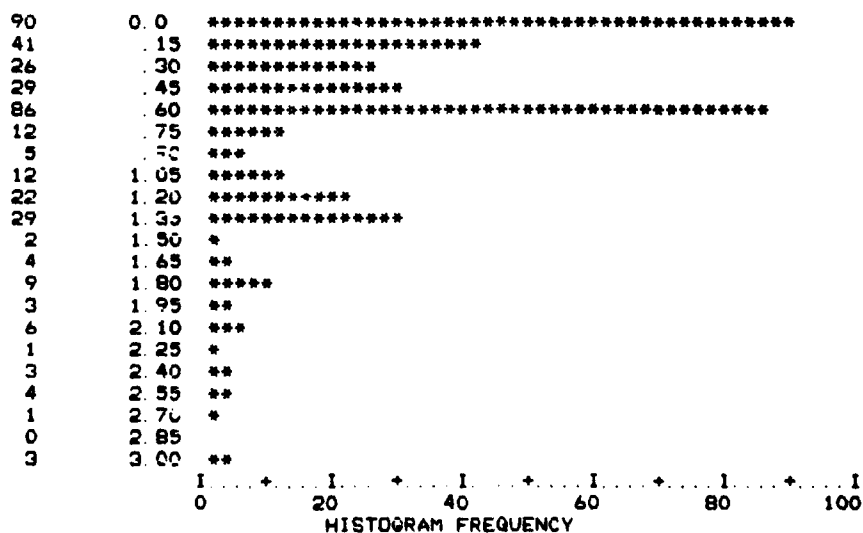
ABNR AREA: BUILT NON-RESIDENTIAL

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
.02	1	0	19	25	3	1	35	.66	3	1	68
.02	1	0	19	26	1	0	36	.66	3	1	69
.02	1	0	19	26	1	0	36	.66	2	1	69
.03	1	0	20	27	1	0	36	.67	2	1	70
.03	2	1	20	27	2	1	37	.67	1	0	70
.03	1	0	20	29	1	0	37	.67	1	0	70
.04	1	0	21	29	1	0	37	.68	1	0	70
.05	1	0	21	29	1	0	37	.69	1	0	71
.05	1	0	21	31	3	1	38	.72	1	0	71
.05	1	0	21	31	1	0	38	.79	2	1	71
.05	1	0	22	31	3	1	39	.79	2	1	72
.06	1	0	22	32	1	0	39	.80	4	1	73
.06	1	0	22	34	2	1	40	.82	1	0	73
.06	1	0	22	35	2	1	40	.85	1	0	73
.06	1	0	23	41	2	1	41	.86	1	0	74
.07	1	0	23	43	1	0	41	.89	1	0	74
.07	1	0	23	44	2	1	42	.92	1	0	74
.08	1	0	23	45	1	0	42	.93	1	0	74
.09	2	1	24	45	2	1	43	1.02	2	1	75
.09	1	0	24	45	1	0	43	1.02	1	0	75
.10	1	0	24	45	4	1	44	1.03	3	1	76
.10	1	0	25	46	1	0	44	1.09	2	1	77
.10	2	1	25	46	3	1	45	1.09	1	0	77
.11	1	0	26	46	1	0	45	1.12	3	1	78
.12	1	0	26	46	2	1	46	1.15	2	1	78
.12	2	1	26	48	2	1	46	1.16	4	1	79
.12	2	1	27	48	2	1	47	1.18	4	1	80

ABNR AREA: BUILT NON-RESIDENTIAL

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
1.19	1	0	80	1.71	3	1	92	2.16	1	0	97
1.19	1	0	81	1.73	3	1	93	2.28	1	0	97
1.22	3	1	81	1.78	2	1	94	2.35	2	1	98
1.25	5	1	83	1.83	1	0	94	2.47	1	0	98
1.27	2	1	83	1.83	3	1	95	2.56	4	1	99
1.40	29	7	91	2.00	3	1	95	2.77	1	0	99
1.44	2	1	91	2.05	4	1	96	3.02	3	1	100
1.71	1	0	91	2.14	1	0	97				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 2.00 OCCURRENCES



MEAN	641	STD ERR	.033	MEDIAN	.546
MODE	0.0	STD DEV	.643	VARIANCE	.414
KURTOSIS	1.456	S E KURT	1.995	SKEWNESS	1.291
S E SKEW	.124	RANGE	3.016	MINIMUM	0.0
MAXIMUM	3.016	SUM	248.841		

ABNR AREA: BUILT NON-RESIDENTIAL

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	.105	33.30	.219
50.00	.546	66.70	.641	75.00	1.021
90.00	1.404				

VALID CASES 388 MISSING CASES 0

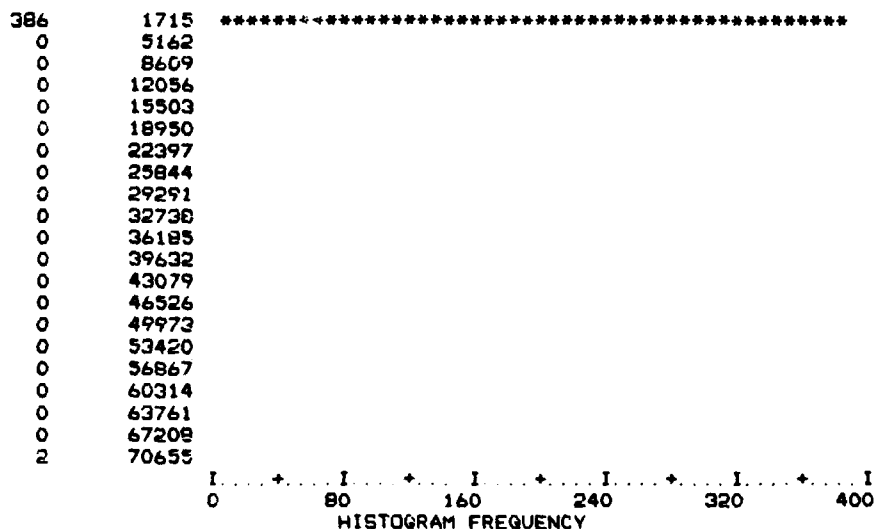
ABR AREA: BUILT RESIDENTIAL

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0.0	86	22	22	.47	1	0	42	.92	1	0	61
.00	2	1	23	.47	1	0	43	.92	3	1	62
.00	2	1	23	.48	1	0	43	.94	1	0	62
.00	2	1	24	.50	1	0	43	.95	5	1	64
.00	2	1	24	.51	1	0	43	.95	2	1	64
.03	3	1	25	.51	1	0	44	.96	1	0	64
.04	1	0	25	.52	3	1	44	.97	1	0	65
.05	1	0	26	.53	1	0	45	.97	1	0	65
.09	1	0	26	.54	4	1	46	.98	1	0	65
.12	1	0	26	.55	2	1	46	1.01	2	1	66
.12	2	1	27	.55	1	0	46	1.02	4	1	67
.15	2	1	27	.57	1	0	47	1.02	1	0	67
.15	1	0	27	.57	1	0	47	1.02	2	1	68
.16	2	1	28	.58	1	0	47	1.04	3	1	68
.17	1	0	28	.58	3	1	48	1.09	1	0	69
.17	1	0	28	.59	2	1	48	1.13	1	0	69
.17	1	0	29	.60	1	0	49	1.24	1	0	69
.18	3	1	29	.60	2	1	49	1.29	1	0	69
.19	3	1	30	.61	3	1	50	1.31	2	1	70
.19	1	0	30	.61	3	1	51	1.32	1	0	70
.20	1	0	31	.62	2	1	51	1.32	1	0	70
.22	1	0	31	.62	2	1	52	1.32	1	0	71
.26	3	1	32	.65	1	0	52	1.37	1	0	71
.28	2	1	32	.67	1	0	52	1.37	1	0	71
.30	1	0	32	.68	1	0	53	1.41	1	0	71
.30	1	0	33	.70	1	0	53	1.48	1	0	72
.31	1	0	33	.71	1	0	53	1.49	1	0	72
.32	3	1	34	.72	1	0	53	1.52	1	0	72
.32	1	0	34	.73	3	1	54	1.65	1	0	72
.33	1	0	34	.74	3	1	55	1.67	3	1	73
.33	2	1	35	.74	2	1	55	1.83	1	0	73
.35	2	1	35	.75	1	0	56	1.89	2	1	74
.36	1	0	36	.75	1	0	56	1.91	1	0	74
.36	3	1	36	.76	1	0	56	1.96	1	0	74
.37	4	1	37	.77	1	0	56	1.96	1	0	75
.37	1	0	38	.77	1	0	57	1.99	1	0	75
.37	1	0	38	.78	1	0	57	2.02	1	0	75
.37	1	0	38	.79	2	1	57	2.02	1	0	76
.38	2	1	39	.80	2	1	58	2.07	3	1	76
.38	3	1	39	.81	2	1	59	2.14	1	0	77
.41	2	1	40	.83	1	0	59	2.22	1	0	77
.43	2	1	40	.86	1	0	59	2.26	1	0	77
.44	1	0	41	.88	2	1	60	2.33	1	0	77
.44	1	0	41	.89	4	1	61	2.35	2	1	78
.44	2	1	41	.90	1	0	61	2.40	2	1	78
.44	2	1	42	.92	1	0	61	2.41	1	0	79

ABR AREA: BUILT RESIDENTIAL

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
2.53	1	0	79	3.32	1	0	85	4.40	1	0	91
2.54	1	0	79	3.35	1	0	86	4.41	2	1	92
2.56	1	0	79	3.37	1	0	86	4.42	1	0	92
2.60	1	0	80	3.54	2	1	86	4.65	2	1	93
2.65	1	0	80	3.64	1	0	87	5.31	1	0	93
2.67	1	0	80	3.64	2	1	87	5.73	3	1	94
2.76	1	0	80	3.68	1	0	87	6.07	1	0	94
2.86	3	1	81	3.83	1	0	88	6.16	4	1	95
2.86	1	0	81	3.85	2	1	88	6.23	3	1	96
2.88	1	0	82	3.93	1	0	88	6.30	4	1	97
2.96	4	1	83	3.94	2	1	89	6.47	2	1	97
2.97	3	1	84	4.01	1	0	89	7.22	2	1	98
3.14	1	0	84	4.01	1	0	89	10.90	1	0	98
3.16	2	1	84	4.03	1	0	90	12.58	4	1	99
3.23	1	0	85	4.08	1	0	90	12.80	1	0	99
3.27	2	1	85	4.40	5	1	91	72370.00	2	1	100

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES



ABR AREA: BUILT RESIDENTIAL

MEAN	374.481	STD ERR	263.434	MEDIAN	.612
MODE	0.0	STD DEV	5189.043	VARIANCE	26926162.7
KURTOSIS	191.479	S E KURT	1.995	SKEWNESS	13.874
S E SKEW	.124	RANGE	72370.000	MINIMUM	0.0
MAXIMUM	72370.000	SUM	145298.450		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	.034	33.30	.318
50.00	.612	66.70	1.016	75.00	2.009
90.00	4.396				

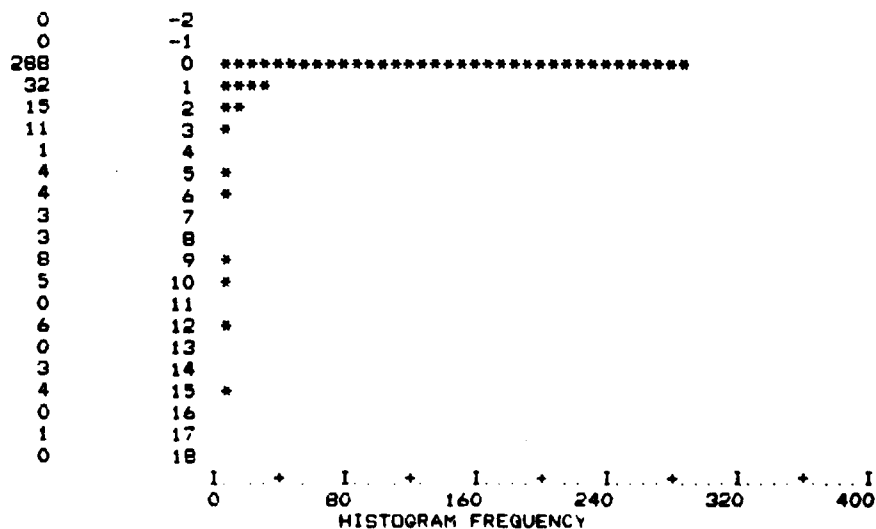
VALID CASES 388 MISSING CASES 0

AD AREA: OPEN WITHOUT BLDGS

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0.0	212	55	55	28	1	0	71	2.15	1	0	85
.00	1	0	55	28	2	1	71	2.19	3	1	85
.00	1	0	55	29	1	0	71	2.28	1	0	86
.00	2	1	56	32	1	0	72	2.30	1	0	86
.01	3	1	56	34	1	0	72	2.45	2	1	86
.01	2	1	57	34	1	0	72	2.60	1	0	87
.01	2	1	57	37	1	0	72	2.69	2	1	87
.01	1	0	58	38	1	0	73	2.71	1	0	87
.01	1	0	58	39	2	1	73	2.73	1	0	88
.02	1	0	58	41	1	0	73	2.82	2	1	88
.02	1	0	59	42	1	0	74	3.10	1	0	88
.03	3	1	59	43	1	0	74	3.19	2	1	89
.03	2	1	60	49	1	0	74	3.22	1	0	89
.03	1	0	60	55	1	0	74	3.79	1	0	89
.04	3	1	61	56	1	0	75	4.86	3	1	90
.05	2	1	61	67	2	1	75	5.07	1	0	90
.05	3	1	62	71	1	0	76	5.91	1	0	91
.06	2	1	63	73	1	0	76	6.09	3	1	91
.06	1	0	63	78	4	1	77	6.78	2	1	92
.08	1	0	63	79	2	1	77	6.89	1	0	92
.08	2	1	64	80	1	0	78	7.53	1	0	93
.09	1	0	64	85	4	1	79	8.14	1	0	93
.09	1	0	64	89	1	0	79	8.17	1	0	93
.09	2	1	65	93	1	0	79	8.64	1	0	93
.10	4	1	66	95	1	0	79	8.84	4	1	94
.10	1	0	66	1.02	1	0	80	9.39	1	0	95
.11	2	1	66	1.12	1	0	80	9.49	2	1	95
.12	1	0	67	1.13	4	1	81	10.41	5	1	96
.13	2	1	67	1.16	3	1	82	11.84	1	0	97
.14	3	1	68	1.16	2	1	82	12.03	4	1	98
.14	2	1	69	1.27	1	0	82	12.39	1	0	98
.18	3	1	69	1.53	2	1	83	14.12	3	1	99
.18	1	0	70	1.58	2	1	84	14.63	4	1	100
.21	1	0	70	1.68	1	0	84	16.87	1	0	100
.22	1	0	70	1.78	1	0	84				
.27	1	0	70	1.89	1	0	84				

AD AREA: OPEN WITHOUT BLDGS

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES



PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	.125	75.00	.671
90.00	4.877				
VALID CASES	388	MISSING CASES	0		

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES

0	-4.5
0	-3.0
0	-1.5
318	0.0
26	1.5
8	3.0
3	4.5
1	6.0
3	7.5
13	9.0
2	10.5
1	12.0
7	13.5
0	15.0
0	16.5
0	18.0
1	19.5
5	21.0
0	22.5
0	24.0
0	25.5

[illegible]

A histogram showing the frequency distribution of data. The x-axis is labeled 'HISTOGRAM FREQUENCY' and has major tick marks at 0, 80, 160, 240, 320, and 400. The y-axis is labeled 'FREQUENCY' and has major tick marks at 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000. The histogram consists of 10 bars, each with a width of 40 units. The heights of the bars are approximately: 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100. The bars are centered at intervals of 40 units, starting from 20 and ending at 400.

MEAN	1.253	STD ERR	.182	MEDIAN	.000
MODE	0.0	STD DEV	3.590	VARIANCE	12.891
KURTOSIS	14.131	S E KURT	1.995	SKEWNESS	3.671
S E SKEW	.124	RANGE	20.947	MINIMUM	0.0
MAXIMUM	20.947	SUM	485.992		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	.000	66.70	.130	75.00	.198
90.00	3.219				

VALID CASES	388	MISSING CASES	0
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A03 AREA OPEN WITH BUILDINGS

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0.0	134	35	35	11	1	0	65	1.19	1	0	86
.00	66	17	52	11	1	0	66	1.20	2	1	86
.00	2	1	52	12	2	1	66	1.29	1	0	86
.00	1	0	52	13	29	7	74	1.66	1	0	87
.00	1	0	53	16	1	0	74	2.13	4	1	88
.00	3	1	53	17	1	0	74	2.20	1	0	88
.00	2	1	54	18	1	0	74	2.25	3	1	89

00	3	1	55	20	1	0	75	2.30	3	1	89
00	1	0	55	20	4	1	76	2.36	1	0	90
00	2	1	55	21	1	0	76	3.03	1	0	90
01	1	0	56	27	1	0	76	3.17	1	0	90
01	2	1	56	28	2	1	77	3.67	2	1	91
01	1	0	56	29	1	0	77	4.30	1	0	91
01	1	0	57	30	2	1	78	4.71	1	0	91
02	1	0	57	32	3	1	78	4.85	1	0	91
02	3	1	58	32	1	0	79	6.70	1	0	92
03	2	1	58	35	1	0	79	7.33	1	0	92
03	3	1	59	45	1	0	79	7.35	1	0	92
03	1	0	59	50	1	0	79	8.04	1	0	93
04	1	0	60	51	2	1	80	8.26	1	0	93
04	1	0	60	59	1	0	80	8.29	4	1	94
05	1	0	60	59	2	1	81	8.54	1	0	94
06	1	0	60	68	2	1	81	8.99	3	1	95
06	3	1	61	70	1	0	81	9.72	4	1	96
06	2	1	62	71	1	0	82	9.93	2	1	96
07	1	0	62	72	1	0	82	12.08	1	0	97
07	2	1	62	83	5	1	83	13.09	4	1	98
08	3	1	63	85	1	0	84	13.47	3	1	98
08	1	0	63	1.01	2	1	84	19.47	1	0	99
09	2	1	64	1.06	2	1	85	20.95	5	1	100
10	2	1	64	1.12	1	0	85				
11	3	1	65	1.16	2	1	85				

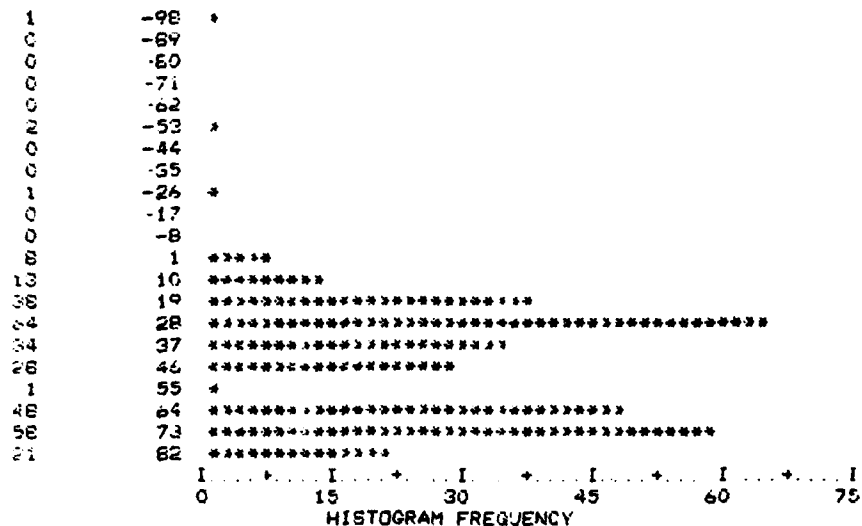
General building descriptions

AGE APPROX AGE OF STRUCTURE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
-99	1	3	.3	.3	.3
-50	2	6	.6	.6	.9
-30	1	3	.3	.3	1.3
0	6	1.9	1.9	1.9	3.2
5	2	.6	.6	.6	3.8
10	12	3.8	3.8	3.8	7.6
14	1	.3	.3	.3	7.9
15	1	.3	.3	.3	8.2
20	37	11.7	11.7	11.7	19.9
25	3	.9	.9	.9	20.8
30	61	19.2	19.2	19.2	40.1
40	34	10.7	10.7	10.7	50.8
45	1	.3	.3	.3	51.1
50	27	8.5	8.5	8.5	59.6
55	1	.3	.3	.3	59.9
60	30	9.5	9.5	9.5	69.4
65	15	4.7	4.7	4.7	74.1
66	1	.3	.3	.3	74.4
68	2	.6	.6	.6	75.1
69	2	.6	.6	.6	75.7
70	39	12.3	12.3	12.3	88.0
72	1	.3	.3	.3	88.3
74	2	.6	.6	.6	89.0
75	14	4.4	4.4	4.4	93.4
78	10	3.2	3.2	3.2	96.6
79	2	.6	.6	.6	97.2
80	2	.6	.6	.6	97.8
82	2	.6	.6	.6	98.4
83	3	.9	.9	.9	99.4
84	2	.6	.6	.6	100.0
TOTAL		317	100.0	100.0	

AGE APPROX AGE OF STRUCTURE

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 1.50 OCCURRENCES



MEAN	44.729	STD ERR	1.401	MEDIAN	40.000
MODE	30.000	STD DEV	24.938	VARIANCE	621.914
KURTOSIS	3.249	S E KURT	1.994	SKENNESS	-.979
S E MODE	.137	RANGE	163.000	MINIMUM	-99.000
MAXIMUM	64.000	SUM	14179.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	20.000	25.00	30.000	33.30	30.000
50.00	40.000	66.70	60.000	75.00	68.500
90.00	75.000				

VALID CASES 317 MISSING CASES 0

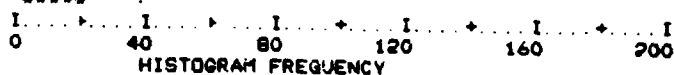
EWIT EXPOSED WALL IN FOOTPRINT

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
4	4	1	1	250	1	0	69	580	1	0	96
20	1	0	2	260	5	2	71	592	1	0	96
25	2	1	2	270	2	1	71	600	2	1	97
30	1	0	3	280	6	2	73	620	1	0	97
40	1	0	3	300	3	1	74	660	3	1	98
50	1	0	3	310	1	0	74	680	1	0	98
60	2	1	4	320	3	1	75	700	2	1	99
70	1	0	4	330	2	1	76	720	2	1	90
80	2	1	5	340	1	0	76	740	1	0	90
90	7	3	8	360	4	1	78	750	1	0	90
100	19	22	29	365	1	0	78	768	1	0	91
110	7	3	32	370	1	0	78	780	1	0	91
120	38	12	44	380	7	2	80	800	2	1	91
130	7	2	46	390	1	0	81	820	1	0	92
140	32	10	56	400	1	0	81	840	1	0	92
150	3	1	57	420	2	1	82	860	1	0	92
160	10	3	61	430	1	0	82	870	1	0	93
170	3	1	62	430	1	0	82	890	1	0	93
180	7	2	64	500	4	1	84	940	1	0	93
190	1	0	64	514	1	0	84	960	1	0	94
200	6	2	66	520	2	1	85	980	1	0	94
220	1	0	66	540	1	0	85	999	17	6	100
230	1	0	67	560	1	0	85				
240	7	2	69	570	1	0	85				

EWIF EXPOSED WALL IN FOOTPRINT

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

9	22	**
15	70	***+
155	118	*****
23	166	*****
9	214	**
21	262	***+
9	310	**
14	358	***+
4	406	*
1	454	
8	502	**
3	550	*
5	598	*
3	646	*
3	694	*
4	742	*
4	790	*
3	838	*
2	886	*
1	934	
21	982	*****



MEAN	269.382	STD ERR	15.103	MEDIAN	140.000
MODE	100.000	STD DEV	268.893	VARIANCE	72303.306
KURTOSIS	1.644	S E KURT	1.994	SKEWNESS	1.684
S E SKEW	.137	RANGE	995.000	MINIMUM	4.000
MAXIMUM	999.000	SUM	85394.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	100.000	25.00	100.000	33.30	120.000
50.00	140.000	66.70	240.000	75.00	320.000
90.00	753.600				

VALID CASES 317 MISSING CASES 0

HI AVERAGE WALL HEIGHT

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	15	26	8.8	8.8	8.8
	18	4	1.3	1.3	10.1
	20	65	20.5	20.5	30.6
	25	26	8.8	8.8	39.4
	30	86	27.1	27.1	66.6
	35	13	4.1	4.1	70.7
	40	28	8.8	8.8	79.5
	45	2	.6	.6	80.1
	50	1	.3	.3	80.4
	55	1	.3	.3	80.8
	60	10	3.2	3.2	83.9
	65	1	.3	.3	84.2
	70	2	.6	.6	84.9
	75	1	.3	.3	85.2
	80	7	2.2	2.2	87.4
	85	3	.9	.9	88.3
	90	5	1.6	1.6	89.9
	100	6	1.9	1.9	91.8
	110	1	.3	.3	92.1
	120	3	.9	.9	93.1
	125	1	.3	.3	93.4
	130	1	.3	.3	93.7
	150	1	.3	.3	94.0

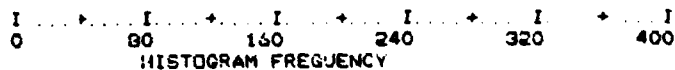
AV: AVERAGE WALL HEIGHT

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	160	1	.3	.3	94.3
	180	1	.3	.3	94.6
	190	2	.6	.6	95.3
	200	1	.3	.3	95.6
	210	2	.6	.6	96.2
	220	2	.6	.6	96.8
	225	1	.3	.3	97.2
	230	1	.3	.3	97.5
	240	1	.3	.3	97.8
	250	1	.3	.3	98.1
	260	1	.3	.3	98.4
	280	1	.3	.3	98.7
	300	1	.3	.3	99.1
	400	1	.3	.3	99.4
	600	1	.3	.3	99.7
	690	1	.3	.3	100.0
TOTAL		317	100.0	100.0	

AV: AVERAGE WALL HEIGHT

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES

234	23	*****
45	56	*****
22	89	***
6	122	*
2	155	
4	188	*
6	221	*
3	254	
1	287	
1	320	
0	353	
1	386	
0	419	
0	452	
0	485	
0	518	
0	551	
1	584	
0	617	
0	650	
1	683	



MEAN	49.675	STD ERR	3.971	MEDIAN	30.000
MODE	30.000	STD DEV	70.696	VARIANCE	4977.904
KURTOSIS	35.132	S E KURT	1.994	SKENNESS	5.165
S E MEAN	.137	RANGE	675.000	MINIMUM	15.000
MAXIMUM	690.000	SUM	15747.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	18.000	25.00	20.000	33.30	25.000
50.00	30.000	66.70	35.000	75.00	40.000
90.00	100.000				
VALID CASES	317	MISSING CASES	0		

LOT1 LOT SIZE SIDE ONE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	15	2	.6	.6	.6
	20	23	7.3	7.3	7.9
	25	10	3.2	3.2	11.0
	30	17	5.4	5.4	16.4
	35	3	.9	.9	17.4
	40	36	11.4	11.4	28.7
	45	1	.3	.3	29.0
	50	59	18.6	18.6	47.6
	60	17	5.4	5.4	53.0
	65	3	.9	.9	53.9
	70	8	2.5	2.5	56.5
	75	2	.6	.6	57.1
	80	12	3.8	3.8	60.9
	90	2	.6	.6	61.5
	100	29	9.1	9.1	70.7
	110	2	.6	.6	71.3
	120	8	2.5	2.5	73.8
	130	1	.3	.3	74.1
	150	11	3.5	3.5	77.6
	156	1	.3	.3	77.9
	160	3	.9	.9	78.9
	170	2	.6	.6	79.5
	180	3	.9	.9	80.4
	190	1	.3	.3	80.9
	200	15	4.7	4.7	85.5
	207	1	.3	.3	85.8
	210	1	.3	.3	86.1
	220	1	.3	.3	86.4
	225	1	.3	.3	86.8
	230	1	.3	.3	87.1
	240	1	.3	.3	87.4
	250	6	1.9	1.9	89.3
	264	18	5.7	5.7	95.0
	270	1	.3	.3	95.3
	290	2	.6	.6	95.9
	300	3	.9	.9	96.8
	400	2	.6	.6	97.5
	450	1	.3	.3	97.8
	470	1	.3	.3	98.1
	500	1	.3	.3	98.4
	600	2	.6	.6	99.1
	750	3	.9	.9	100.0
TOTAL		317	100.0	100.0	

LOT1 LOT SIZE SIDE ONE

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

0	-37	
35	5	*****
136	47	*****
53	89	*****
22	131	*****
10	173	***
20	215	*****
26	257	*****
5	299	*
0	341	
2	383	*
0	425	
2	467	*
1	509	
0	551	
2	593	*
0	635	
0	677	
0	719	
3	761	*
0	803	

I . . . I . . . I . . . I . . . I . . . I . . . I
0 40 80 120 160 200
HISTOGRAM FREQUENCY

MEAN	108.596	STD ERR	6.433	MEDIAN	60.000
MODE	50.000	STD DEV	114.529	VARIANCE	13116.693
KURTOSIS	10.457	S E KURT	1.994	SKEWNESS	2.780
S E SKEN	.137	RANGE	735.000	MINIMUM	15.000
MAXIMUM	750.000	SUM	34125.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	25.000	25.00	40.000	33.30	50.000
50.00	60.000	66.70	100.000	75.00	150.000
90.00	264.000				

VALID CASES	317	MISSING CASES	0
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LOT2 LOT SIZE SIDE TWO

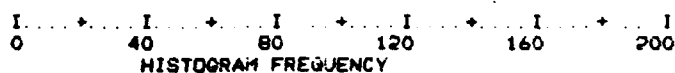
VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	20	5	1.6	1.6	1.6
	30	15	4.7	4.7	6.3
	35	1	.3	.3	6.6
	40	42	13.2	13.2	19.9
	45	5	1.6	1.6	21.5
	50	53	16.7	16.7	38.2
	60	36	11.4	11.4	49.5
	70	14	4.4	4.4	53.9
	75	2	.6	.6	54.6
	80	25	7.9	7.9	62.5
	90	6	1.9	1.9	64.4
	100	23	7.3	7.3	71.6
	110	3	.9	.9	72.6
	120	9	2.8	2.8	75.4
	130	2	.6	.6	76.0
	135	1	.3	.3	76.3
	140	4	1.3	1.3	77.6
	150	12	3.8	3.8	81.4
	160	5	1.6	1.6	83.0
	180	3	.9	.9	83.9
	200	15	4.7	4.7	88.6
	210	2	.6	.6	89.3
	220	2	.6	.6	89.9
	230	1	.3	.3	90.2
	240	1	.3	.3	90.5
	250	1	.3	.3	90.9
	264	17	5.4	5.4	96.2
	280	1	.3	.3	96.5
	300	3	.9	.9	97.5
	350	1	.3	.3	97.8
	360	1	.3	.3	98.1
	400	2	.6	.6	98.7
	500	3	.9	.9	99.7
	600	1	.3	.3	100.0
TOTAL		317	100.0	100.0	

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

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63      30      <*****
106     58      <*****>*****<*****
33      86      <*****
25      114     <*****
19      142     <*****
8       170     <*****
17      176     <*****
3       226     <*****
19      254     <*****
1       282     <*****
3       310     <*****
1       338     <*****
1       366     <*****
2       394     <*****
0       422     <*****
0       450     <*****
0       478     <*****
3       506     <*****
0       534     <*****
0       562     <*****
1       590     <*****

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MEAN	102.943	STD ERR	4.976	MEDIAN	70.000
MODE	50.000	STD DEV	98.591	VARIANCE	7848.452
KURTOSIS	6.472	S E KURT	1.994	SKEWNESS	2.261
S E SKEW	.137	RANGE	500.000	MINIMUM	20.000
MAXIMUM	600.000	SUM	32633.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	40.000	25.00	50.000	33.30	50.000
50.00	70.000	66.70	100.000	75.00	120.000
50.00	232.000				

VALID CASES	317	MISSING CASES	0
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BUILD NUM ADDITIONAL BUILD IN FOOT

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
1	79	24.9	24.9	24.9	24.9
2	32	10.1	10.1	35.0	35.0
3	25	7.9	7.9	42.9	42.9
4	26	8.2	8.2	51.1	51.1
5	59	18.6	18.6	69.7	69.7
6	32	10.1	10.1	79.8	79.8
7	31	9.8	9.8	89.6	89.6
8	20	6.3	6.3	95.9	95.9
9	5	1.6	1.6	97.5	97.5
10	4	1.3	1.3	98.7	98.7
16	2	.6	.6	99.4	99.4
18	1	.3	.3	99.7	99.7
21	1	.3	.3	100.0	100.0
TOTAL	317	100.0	100.0		

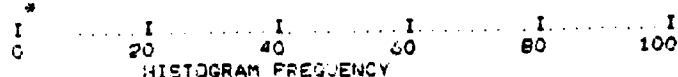
TOTAL	317	100.0	100.0
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COUNT VALUE ONE SYMBOL EQUALS APPROXIMATELY 2.00 OCCURRENCES

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79      1.00 *****
32      2.00 *****
29      3.00 *****
26      4.00 *****
39      5.00 *****
32      6.00 *****
31      7.00 *****
20      8.00 *****
5        9.00 ***
4       10.00 **
0       11.00
0       12.00
0       13.00
0       14.00
0       15.00
2       16.00 *
0       17.00
1       18.00 *
0       19.00
0       20.00
1       21.00 *

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UNFILED NUM ADDITIONAL BUILD IN FOOT

MEAN	4.233	STD ERR	.163	MEDIAN	4.000
MODE	1.000	STD DEV	2.905	VARIANCE	8.464
KURTOSIS	4.892	S E KURT	1.994	SKEWNESS	1.389
S E SKEW	.137	RANGE	20.000	MINIMUM	1.000
MAXIMUM	21.000	SUM	1342.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	1.000	25.00	1.500	33.30	2.000
50.00	4.000	66.70	5.000	75.00	6.000
90.00	8.000				

VALID CASES 317 MISSING CASES 0

SIDE1 SIDE ONE OF BLDG

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	15	8	2.5	2.5	2.5
	20	64	20.2	20.2	22.7
	25	14	4.4	4.4	27.1
	30	59	18.6	18.6	45.7
	35	6	1.9	1.9	47.6
	40	39	12.3	12.3	59.9
	45	3	.9	.9	60.7
	50	15	4.7	4.7	65.6
	55	1	.3	.3	65.9
	60	8	2.5	2.5	68.5
	65	2	.6	.6	69.1
	70	5	1.6	1.6	70.7
	75	1	.3	.3	71.0
	80	5	1.6	1.6	72.6
	90	4	1.3	1.3	73.8
	100	12	3.8	3.8	77.6
	110	2	.6	.6	78.2
	120	7	2.2	2.2	80.4
	130	1	.3	.3	80.6

140	1	.3	.3	81.1
150	8	2.5	2.5	83.6
156	1	.3	.3	83.9
160	3	.9	.9	84.9
170	1	.3	.3	85.2
180	3	.9	.9	86.1
170	1	.3	.3	86.4
200	10	3.2	3.2	89.6
207	1	.3	.3	89.9
210	1	.3	.3	90.2
223	1	.3	.3	90.5
230	1	.3	.3	90.9
240	1	.3	.3	91.2
250	1	.3	.3	91.5
254	13	4.1	4.1	93.6
270	1	.3	.3	95.2
290	1	.3	.3	96.2
300	3	.9	.9	97.2
320	1	.3	.3	97.5
400	2	.6	.6	98.1
500	1	.3	.3	98.4
600	1	.3	.3	98.7
750	1	.3	.3	99.1
800	1	.3	.3	100.0

TOTAL	317	100.0	100.0	

SIDE1 SIDE ON- OF BLDG

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

193	28	*****
37	66	*****
28	104	*****
14	142	****
5	180	*
14	216	****
16	256	****
4	294	*
1	332	
0	370	
2	408	*
0	446	
1	484	
0	522	
0	560	
1	598	
0	636	
0	674	
0	712	
3	750	*
1	788	

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0 40 80 120 160 200
HISTOGRAM FREQUENCY

MEAN	84.590	STD ERR	6.473	MEDIAN	40.000
MODE	20.000	STD DEV	115.252	VARIANCE	13283.084
KURTOSIS	15.316	S E KURT	1.994	SKENNESS	3.451
S E SKEN	.137	RANGE	785.000	MINIMUM	15.000
MAXIMUM	300.000	SUM	26315.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	20.000	25.00	25.000	33.30	30.000
50.00	40.000	66.70	60.000	75.00	100.000
90.00	213.000				

VALID CASES 317 MISSING CASES 0

SIDEE SIDE TWO OF BLDG

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	14	1	.3	.3	.3
	20	35	11.0	11.0	11.4
	25	17	5.4	5.4	16.7
	30	108	34.1	34.1	50.8
	35	3	.9	.9	51.7
	40	35	11.0	11.0	62.8
	50	17	5.4	5.4	68.1
	55	1	.3	.3	68.5
	60	10	3.2	3.2	71.6
	70	6	1.9	1.9	73.5
	80	5	1.6	1.6	75.1
	90	5	1.6	1.6	76.7
	100	15	4.7	4.7	81.4
	110	1	.3	.3	81.7
	120	8	2.5	2.5	84.2
	130	3	.9	.9	85.2
	135	1	.3	.3	85.5
	140	5	1.6	1.6	87.1
	150	10	3.2	3.2	90.2
	160	2	.6	.6	90.9
	180	2	.6	.6	91.5
	200	3	.9	.9	92.4
	210	1	.3	.3	92.7
	220	2	.6	.6	93.4
	230	1	.3	.3	93.7
	264	11	3.5	3.5	97.2
	280	1	.3	.3	97.5
	300	2	.6	.6	98.1
	350	1	.3	.3	98.4
	400	2	.6	.6	99.1
	500	3	.9	.9	100.0
TOTAL		317	100.0	100.0	

SIDEE SIDE TWO OF BLDG

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

53	17	*****
163	41	*****
17	65	****
25	89	*****
9	113	**
9	137	**
12	161	***
2	185	*
6	209	**
1	233	
11	257	***
1	281	
2	305	*
0	329	
1	353	
0	377	
2	401	*
0	425	
0	449	
0	473	
3	497	*

I + I + I + I + I + I + I
0 40 80 120 160 200
HISTOGRAM FREQUENCY

MEAN	21.129	STD ERR	4.554	MEDIAN	30.000
MODE	30.000	STD DEV	81.090	VARIANCE	6575.562
WIGGESS	8.761	S & KURT	1.974	SKEWNESS	2.739

S E SKEN	.137	RANGE	486.000	MINIMUM	14.000
MAXIMUM	500.000	SUM	22548.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	20.000	25.00	30.000	33.30	30.000
50.00	30.000	66.70	30.000	75.00	85.000
90.00	152.000				

VALID CASES	317	MISSING CASES	
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TYPE STRUCTURE TYPE-USAGE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
1 UNIT STRUCTURE	1	151	47.6	47.6	47.6
2 UNITS	2	14	4.4	4.4	52.1
3 TO 4 UNITS	3	4	1.3	1.3	53.3
5 TO 9 UNITS	4	4	1.3	1.3	54.6
10 TO 19 UNITS	5	7	2.2	2.2	56.8
20 TO 49 UNITS	6	5	1.6	1.6	58.4
OFFICE BUILDING	8	21	6.6	6.6	65.0
COMMERCIAL BUILD	9	63	19.9	19.9	84.9
INDUSTRIAL	10	20	6.3	6.3	91.2
EDUCATIONAL	11	9	2.8	2.8	94.0
RELIGIOUS	12	5	1.6	1.6	95.6
HEALTH BUILDING	13	2	.6	.6	96.2
OTHER	15	12	3.8	3.8	100.0
TOTAL		317	100.0	100.0	

COUNT VALUE ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

151	1.00	*****
14	2.00	****
4	3.00	*
4	4.00	*
7	5.00	**
5	6.00	*
0	7.00	
21	8.00	*****
63	9.00	*****
20	10.00	*****
9	11.00	**
5	12.00	*
2	13.00	*
0	14.00	
12	15.00	***

I I I I I I
 0 40 80 120 160 200
 HISTOGRAM FREQUENCY

MEAN	4.959	STD ERR	.248	MEDIAN	2.000
MODE	1.000	STD DEV	4.415	VARIANCE	19.495
KURTOSIS	-1.125	S E KURT	1.994	SKENNESS	.535
S E SKEN	.137	RANGE	14.000	MINIMUM	1.000
MAXIMUM	15.000	SUM	1572.000		

TYPE STRUCTURE TYPE-USAGE

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	1.000	25.00	1.000	33.30	1.000
50.00	2.000	66.70	9.000	75.00	9.000
90.00	10.000				

VALID CASES	317	MISSING CASES	0
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Spatial areas of building material types

AREA: PAINTED SURFACE

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0.0	16	5	5	186.92	1	0	20	396.87	1	0	34
1.50	1	0	5	191.49	1	0	20	398.73	1	0	34
18.16	1	0	6	193.22	1	0	20	400.89	1	0	35
19.67	1	0	6	193.42	1	0	21	406.07	1	0	35
31.20	1	0	6	203.04	1	0	21	410.61	1	0	35
33.51	1	0	7	210.65	1	0	21	412.66	1	0	36
43.54	1	0	7	219.15	1	0	21	415.89	1	0	36
48.72	1	0	7	219.36	1	0	22	425.25	1	0	36
49.69	1	0	8	221.31	1	0	22	426.32	1	0	37
54.43	1	0	8	226.97	1	0	22	426.59	1	0	37
62.43	1	0	8	240.37	1	0	23	444.85	1	0	37
71.68	1	0	9	243.15	1	0	23	475.29	1	0	38
71.68	1	0	9	258.02	1	0	23	477.27	2	1	38
80.19	1	0	9	266.54	1	0	24	479.17	1	0	38
80.80	1	0	9	267.23	1	0	24	479.29	1	0	39
89.44	1	0	10	271.84	1	0	24	482.68	1	0	39
95.53	1	0	10	274.51	1	0	25	491.23	1	0	39
110.08	1	0	10	276.92	1	0	25	492.33	1	0	40
127.10	1	0	11	284.67	1	0	25	507.35	1	0	40
134.41	1	0	11	284.75	1	0	26	509.60	1	0	40
138.48	1	0	11	285.00	1	0	26	515.06	1	0	41
139.62	1	0	12	290.58	1	0	26	518.00	1	0	41
140.60	1	0	12	291.89	1	0	26	522.20	1	0	41
141.83	1	0	12	296.49	1	0	27	529.41	1	0	42
141.89	1	0	13	296.51	1	0	27	537.46	1	0	42
141.94	1	0	13	298.95	1	0	27	538.65	1	0	42
145.42	1	0	13	300.84	1	0	28	554.91	1	0	43
148.73	1	0	14	304.86	1	0	28	569.39	1	0	43
149.81	1	0	14	308.09	1	0	28	580.00	1	0	43
150.45	1	0	14	311.80	1	0	29	589.60	1	0	44
158.31	1	0	15	312.14	1	0	29	601.30	1	0	44
158.57	1	0	15	312.36	1	0	29	621.90	1	0	44
160.98	1	0	15	315.69	1	0	30	627.05	1	0	44
161.51	1	0	15	316.48	1	0	30	627.53	1	0	45
167.44	1	0	16	323.25	1	0	30	628.27	1	0	45
170.45	1	0	16	325.86	1	0	31	656.79	1	0	45
171.94	1	0	16	325.73	1	0	31	664.62	1	0	46
172.05	1	0	17	338.90	1	0	31	667.66	1	0	46
171.67	1	0	17	349.95	1	0	32	694.06	1	0	46
173.62	1	0	17	351.41	1	0	32	703.28	1	0	47
175.70	1	0	18	352.32	1	0	32	735.00	1	0	47
177.70	1	0	18	354.57	1	0	32	741.70	1	0	47
181.55	1	0	18	356.04	1	0	33	748.73	1	0	48
181.71	1	0	19	373.83	1	0	33	750.05	1	0	48
181.81	1	0	19	374.31	1	0	33	755.03	1	0	48
181.81	1	0	19	375.51	1	0	34	765.94	1	0	49

AREA: PAINTED SURFACE

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
790.16	1	0	49	1795.71	1	0	63	3292.68	1	0	78
801.17	1	0	49	1799.34	1	0	64	3340.63	1	0	79
822.25	1	0	50	1807.69	1	0	64	3345.40	1	0	79
822.64	1	0	50	1814.88	1	0	64	3543.75	1	0	79
826.23	1	0	50	1816.36	1	0	65	3604.40	1	0	79
837.43	1	0	50	1825.84	1	0	65	3697.60	1	0	80
857.27	1	0	51	1869.23	1	0	65	3787.80	1	0	80
882.35	1	0	51	1903.73	1	0	66	3819.96	1	0	80
901.26	1	0	51	1947.83	1	0	66	3822.56	1	0	81
977.44	1	0	52	1956.27	1	0	66	3884.21	1	0	81
979.35	1	0	52	2006.35	1	0	67	4406.56	1	0	81
1012.03	1	0	52	2058.87	1	0	67	4552.58	1	0	82
1012.50	1	0	53	2071.23	1	0	67	4573.88	1	0	82

APAINI AREA PAINTED SURFACECOUNT MIDPOINT GNE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES

MEAN	6401.541	STD ERR	1174.619	MEDIAN	826.230
MODE	0.0	STD DEV	20913.497	VARIANCE	437374351
KURTOSIS	52.744	S E KURT	1.994	SKEWNESS	6.600
S E SKEW	137	RANGE	215218.667	MINIMUM	0.0
MAXIMUM	215218.667	SUM	2029288.37		

AFAINI AREA: PAINTED SURFACE

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	74.308	25.00	280.797	33.30	374.278
50.00	826.230	66.70	2060.139	75.00	2968.949
90.00	11842.617				

VALID CASES 317 MISSING CASES 0

AMORT AREA: MORTAR / MASONRY SURFACE

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0.0	41	13	13	905.25	1	0	28	1706.02	1	0	43
8.97	1	0	13	934.05	1	0	28	1709.38	1	0	43
9.82	1	0	14	951.22	1	0	28	1734.94	1	0	43
10.15	1	0	14	957.41	1	0	29	1735.54	1	0	44
37.51	1	0	14	930.80	1	0	29	1737.93	1	0	44
46.22	1	0	15	1060.47	1	0	29	1766.49	1	0	44
108.60	1	0	15	1075.55	1	0	30	1805.37	1	0	44
117.12	1	0	15	1107.69	2	1	30	1819.15	1	0	45
200.30	1	0	15	1147.17	1	0	31	1827.34	1	0	45
204.27	1	0	16	1157.56	1	0	31	1843.27	1	0	45
206.42	1	0	16	1130.22	1	0	31	1847.79	1	0	46
211.97	1	0	16	1183.64	1	0	32	1881.15	1	0	46
222.22	1	0	17	1137.63	1	0	32	1892.97	1	0	46
240.00	1	0	17	1193.43	1	0	32	1890.50	1	0	47
248.95	2	1	18	1213.87	1	0	32	1927.69	1	0	47
254.60	1	0	18	1245.04	1	0	33	1959.63	1	0	47
259.37	1	0	18	1254.10	1	0	33	1967.90	1	0	48
260.30	1	0	19	1302.25	1	0	33	1974.75	1	0	48
263.74	1	0	19	1329.78	1	0	34	2004.40	1	0	48
264.71	1	0	19	1371.73	1	0	34	2009.13	1	0	49
273.76	1	0	20	1387.28	1	0	34	2043.96	1	0	49
274.87	1	0	20	1404.46	1	0	35	2051.04	1	0	49
288.63	1	0	20	1419.20	1	0	35	2075.49	1	0	50
293.51	1	0	21	1447.45	1	0	35	2082.51	1	0	50
293.67	1	0	21	1470.72	1	0	36	2088.16	1	0	50
315.79	1	0	21	1480.71	1	0	36	2102.98	1	0	50
316.41	1	0	21	1482.50	1	0	36	2110.48	1	0	51
320.95	1	0	22	1485.29	1	0	37	2132.77	1	0	51
323.28	1	0	22	1496.72	1	0	37	2145.57	1	0	51
338.35	1	0	22	1500.00	1	0	37	2165.12	1	0	52
339.25	1	0	23	1511.26	1	0	38	2170.93	1	0	52
336.96	1	0	23	1517.17	1	0	38	2182.98	1	0	52
390.61	1	0	23	1542.68	1	0	38	2196.06	1	0	53
409.07	1	0	24	1552.50	1	0	38	2218.26	1	0	53
429.50	1	0	24	1554.00	1	0	39	2220.71	1	0	53
439.02	1	0	24	1592.10	1	0	39	2223.68	1	0	54
468.59	1	0	25	1593.65	1	0	39	2225.19	1	0	54
482.37	1	0	25	1597.59	1	0	40	2226.32	1	0	54
636.32	1	0	25	1648.59	1	0	40	2241.28	1	0	55
648.03	1	0	26	1661.54	1	0	40	2281.03	1	0	55
652.03	1	0	26	1664.74	1	0	41	2289.47	1	0	55
812.37	1	0	26	1665.56	1	0	41	2325.75	1	0	56
817.65	1	0	26	1671.49	1	0	41	2354.99	1	0	56
843.73	1	0	27	1690.00	1	0	42	2407.60	1	0	56
874.77	1	0	27	1696.49	1	0	42	2425.36	1	0	56
877.1	1	0	27	1698.00	1	0	42	2438.52	1	0	57

ADORT AREA: MORTAR / MASONRY SURFACE

VALUE	FREQ	PCT	CUM	VALUE	FREQ	PCT	CUM	VALUE	FREQ	PCT	CUM
2448 69	1	0	57	3554 43	1	0	71	9332 79	1	0	86
2454 79	1	0	57	3558 14	1	0	72	9631 82	1	0	87
2470 59	1	0	58	3585 76	1	0	72	9701 27	1	0	87
2484 94	1	0	58	3589 09	1	0	72	9803 27	1	0	87
2498 27	1	0	58	3634 62	1	0	73	10694 96	1	0	88
2503 65	1	0	59	3728 84	1	0	73	12400 16	1	0	88
2557 97	1	0	59	3785 62	1	0	73	12626 88	1	0	88
2590 20	1	0	59	3892 49	1	0	74	13058 07	1	0	89
2636 41	1	0	60	3921 79	1	0	74	14082 23	1	0	89
2647 06	1	0	60	3941 16	1	0	74	16342 11	1	0	89
2673 57	1	0	60	3964 40	1	0	74	17536 00	1	0	90
2689 53	1	0	61	3994 98	1	0	75	18096 27	1	0	90
2690 48	1	0	61	4018 21	1	0	75	18272 26	1	0	90
2703 49	1	0	61	4090 91	1	0	75	18627 45	1	0	91
2730 00	1	0	62	4124 70	1	0	76	19605 25	1	0	91
2763 33	1	0	62	4170 57	1	0	76	19706 40	1	0	91
2804 53	1	0	62	4317 01	2	1	77	19873 43	1	0	91
2838 43	1	0	62	4320 17	1	0	77	20147 99	1	0	92
2846 41	1	0	63	4462 50	1	0	77	20165 09	1	0	92
2850 62	1	0	63	4474 56	1	0	78	22290 40	1	0	92
2854 92	1	0	63	4489 32	1	0	78	22444 06	1	0	93
2856 75	1	0	64	4544 89	1	0	78	23479 82	1	0	93
2921 74	1	0	64	4547 37	1	0	79	24182 15	1	0	93
2926 43	1	0	64	4577 75	1	0	79	25611 14	1	0	94
2976 72	1	0	65	4636 24	1	0	79	27137 22	1	0	94
3004 25	1	0	65	4699 78	1	0	79	28629 35	1	0	94
3078 13	1	0	65	4908 64	1	0	80	29722 31	1	0	95
3094 74	1	0	66	4952 94	1	0	80	30006 65	1	0	95
3134 70	1	0	66	4977 40	1	0	80	35764 00	1	0	95
3147 40	1	0	66	5370 37	1	0	81	35851 55	1	0	96
3160 10	1	0	67	5425 60	1	0	81	38921 25	1	0	96
3183 67	1	0	67	5786 75	1	0	81	41461 28	1	0	96
3211 76	1	0	67	6045 36	1	0	82	43138 10	1	0	97
3226 17	1	0	68	6856 61	3	1	83	44419 74	1	0	97
3232 65	1	0	68	6893 77	1	0	83	44723 50	1	0	97
3236 07	1	0	68	6910 40	1	0	83	46096 27	1	0	97
3248 62	1	0	68	6941 50	1	0	84	51222 61	1	0	98
3304 35	1	0	69	6993 99	1	0	84	52129 42	1	0	98
3379 45	1	0	69	7133 75	1	0	84	59217 67	1	0	98
3389 27	1	0	69	7492 50	1	0	85	61978 65	1	0	99
3451 51	1	0	70	8017 69	1	0	85	64058 21	1	0	99
3451 51	1	0	70	8109 32	1	0	85	82501 33	1	0	99
3503 77	1	0	70	8166 18	1	0	85	94537 84	1	0	100
3507 10	1	0	71	8562 41	1	0	86	141410 4	1	0	100
3517 1	1	0	71	8562 41	1	0	86				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES

258	3365	*****
22	10099	***
11	16833	*
9	23567	*
4	30301	*
3	37035	
4	43769	*
3	50503	
1	57237	
2	63971	
0	70705	
0	77439	
1	84173	
0	90907	
1	97641	
0	104375	
0	111109	
0	117843	
0	124577	
0	131311	
1	138045	

HISTOGRAM FREQUENCY

MEAN	2395.390	STD ERR	815.455	MEDIAN	2088.157
MODE	0.0	STD DEV	14518.767	VARIANCE	210794451
MINIMUM	31.710	S E KURT	1.994	SKEWNESS	4.902
S E MEAN	.137	RANGE	141410.394	MINIMUM	0.0
MAXIMUM	141410.394	SUM	2024158.75		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	559.356	33.30	1297.147
50.00	2038.157	66.70	3195.591	75.00	4054.559
90.00	18359.301				

VALID CASES 317 MISSING CASES 0

ASTURF AREA STONE SURFACE

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0.0	109	60	60	298.90	1	0	73	741.18	1	0	87
50.14	1	0	60	299.15	1	0	74	742.59	1	0	87
53.60	1	0	60	302.59	1	0	74	834.91	1	0	87
106.23	1	0	61	311.91	1	0	74	860.15	1	0	88
131.36	1	0	61	313.25	1	0	74	911.57	1	0	88
152.62	1	0	61	320.00	1	0	75	916.47	1	0	88
153.85	1	0	62	320.40	1	0	75	984.13	1	0	89
167.60	1	0	62	325.63	1	0	75	1090.60	1	0	89
176.86	1	0	62	328.25	1	0	76	1133.63	1	0	89
187.30	1	0	62	331.95	1	0	76	1153.40	1	0	90
188.39	1	0	63	342.61	1	0	76	1158.70	1	0	90
193.41	1	0	63	344.12	1	0	77	1167.92	1	0	90
197.37	1	0	63	347.18	1	0	77	1189.37	1	0	91
200.01	1	0	64	349.26	1	0	77	1195.38	1	0	91
206.61	1	0	64	350.11	1	0	78	1378.02	1	0	91
207.76	1	0	64	356.54	1	0	78	1558.36	1	0	91
210.39	1	0	65	362.79	1	0	78	1604.56	1	0	92
212.80	1	0	65	370.37	1	0	79	1668.92	1	0	92
213.42	1	0	65	387.93	1	0	79	1680.00	1	0	92
213.61	1	0	66	393.44	1	0	79	1789.11	1	0	93
216.61	1	0	66	397.96	1	0	79	1835.29	1	0	93
216.92	1	0	66	399.56	1	0	80	1963.35	1	0	93
226.24	1	0	67	403.43	1	0	80	2032.68	1	0	94
226.91	1	0	67	418.60	1	0	80	2239.58	1	0	94
227.5	1	0	67	423.39	1	0	81	2256.93	1	0	94
232.50	1	0	68	423.53	1	0	81	2606.54	1	0	95
237.57	1	0	68	443.02	1	0	81	3562.53	1	0	95
241.31	1	0	68	456.71	1	0	82	3819.98	1	0	95
241.51	1	0	68	489.89	1	0	82	3862.31	1	0	96
242.66	1	0	69	495.03	1	0	82	4709.96	1	0	96
242.70	1	0	69	495.37	1	0	83	5334.54	1	0	96
244.80	1	0	69	555.33	1	0	83	5693.65	1	0	97
246.74	1	0	70	559.92	1	0	83	6352.85	1	0	97
247.11	1	0	70	560.00	1	0	84	6630.50	1	0	97
247.31	1	0	70	576.58	1	0	84	6988.17	1	0	97
247.31	1	0	71	595.24	1	0	84	7064.91	1	0	98
247.61	1	0	71	652.34	1	0	85	7664.52	1	0	98
248.61	1	0	71	661.76	1	0	85	8376.27	1	0	98
248.61	1	0	72	677.97	1	0	85	8592.19	1	0	99
248.61	1	0	72	689.42	1	0	85	8890.65	1	0	99
248.61	1	0	72	691.76	1	0	86	11870.40	1	0	99
248.61	1	0	73	718.92	1	0	86	13147.20	1	0	100
248.61	1	0	73	731.42	1	0	86	13751.13	1	0	100

ASTONE AREA STONE SURFACE

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES

267	318	*****
21	974	***
7	1630	*
5	2286	*
0	2742	
3	3598	
0	4254	
1	4710	
2	5566	
1	6222	
3	6878	
1	7534	
1	8190	
2	8846	
0	9502	
0	10158	
0	10814	
0	11470	
1	12126	
0	12782	
2	13438	

HISTOGRAM FREQUENCY

MEAN	505.125	STD ERR	102.450	MEDIAN	0.0
MODE	0.0	STD DEV	1824.063	VARIANCE	3327204.08
PORTION	24.193	S E KURT	1.964	SKENNESS	4.656
S E EVEN	.137	RANGE	13756.132	MINIMUM	0.0
MAXIMUM	13756.133	SUM	191824.502		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	227.026	75.00	323.014
90.00	1138.207				

VALID CASES 317 MISSING CASES 0

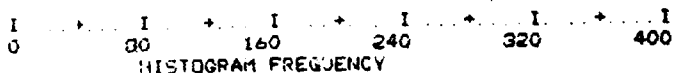
AGA V AREA GALVANIZED SURFACE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0.0	294	92.7	92.7	92.7
	79.89	1	.3	.3	93.1
	469.64	1	.3	.3	93.4
	610.91	1	.3	.3	93.7
	950.88	1	.3	.3	94.0
	1006.71	1	.3	.3	94.3
	1200.00	1	.3	.3	94.6
	1304.67	1	.3	.3	95.0
	2513.07	1	.3	.3	95.3
	3536.46	3	.9	.9	96.2
	4317.01	2	.6	.6	96.8
	4594.49	1	.3	.3	97.2
	6414.24	3	.9	.9	98.1
	11178.49	1	.3	.3	98.4
	63763.21	1	.3	.3	98.7
	64840.40	1	.3	.3	99.1
	83761.96	1	.3	.3	99.4
	208703.27	1	.3	.3	99.7
	500318.73	1	.3	.3	100.0
TOTAL		317	100.0	100.0	

47ALV AREA GALVANIZED SURFACE

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES

312	11909	*****
0	35734	
2	59559	
1	83384	
0	107209	
0	131034	
0	154859	
0	178684	
1	202509	
0	226334	
0	250159	
0	273984	
0	297809	
0	321634	
0	345459	
0	369284	
0	393109	
0	416934	
0	440759	
0	464584	
1	488409	



MEAN	3103.557	STD ERR	1749.127	MEDIAN	0.0
MODE	0.0	STD DEV	31142.321	VARIANCE	969844164
PURTOSIS	212.912	S E KURT	1.994	SKEWNESS	13.980
S E SACH	137	RANGE	500318.725	MINIMUM	0.0
MAXIMUM	500318.725	SUM	983827.449		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	0.0	75.00	0.0
90.00	0.0				

VALID CASES 317 MISSING CASES 0

47THEF AREA OTHER MATERIALS

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0.0	120	41	41	30.51	1	0	56	294.55	1	0	71
.96	1	0	41	30.54	1	0	57	307.31	1	0	71
1.00	1	0	42	30.56	1	0	58	314.11	1	0	72
1.09	1	0	42	30.57	1	0	59	344.34	1	0	72
1.13	1	0	42	30.77	1	0	59	351.05	1	0	72
9.05	1	0	43	30.80	1	0	60	359.15	1	0	73
11.20	1	0	43	31.00	1	0	60	366.15	1	0	73
18.56	1	0	43	31.00	1	0	61	370.00	1	0	73
20.31	1	0	44	31.31	1	0	61	431.72	1	0	74
20.76	1	0	44	32.07	1	0	59	436.36	1	0	74
21.09	1	0	44	32.11	1	0	60	505.53	1	0	74
21.25	1	0	44	32.31	1	0	60	507.55	1	0	74
21.62	1	0	45	32.64	1	0	60	534.12	1	0	75
21.69	1	0	45	34.03	1	0	61	544.86	1	0	75
21.74	1	0	45	34.31	1	0	61	546.84	1	0	75
21.67	1	0	46	34.5	1	0	61	566.30	1	0	76
21.90	1	0	46	34.50	1	0	62	617.53	1	0	76
21.91	1	0	46	34.57	1	0	62	659.79	1	0	76
22.06	2	1	47	34.71	1	0	62	673.32	1	0	77
22.36	1	0	47	36.83	1	0	62	730.43	1	0	77
22.56	1	0	48	40.68	1	0	63	768.00	1	0	77
22.73	1	0	48	41.54	1	0	63	834.54	1	0	78
22.97	1	0	48	41.80	1	0	63	840.00	1	0	78
23.07	1	0	49	42.69	1	0	64	851.20	1	0	78

OTHER AREA: OTHER MATERIALS

MEAN	5370.366	STD ERR	1427.805	MEDIAN	24.590
MODE	0.0	STD DEV	25421.351	VARIANCE	646245066
KURTOSIS	39.915	S E KURT	1.994	SKEWNESS	6.101
S E SKEN	.137	RANGE	213222.029	MINIMUM	0.0
MAXIMUM	213222.029	SUM	1702405.92		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	24.590	66.70	79.816	75.00	545.850
90.00	2248.641				

VALID CASES 317 MISSING CASES 0

Roof material and roof-mounted apparatus items and material types

CAREA EXPOSED CHIMNEY AREA

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	160	50.5	50.5	50.5
	8	1	.3	.3	50.8
	10	1	.3	.3	51.1
	12	2	.6	.6	51.7
	16	1	.3	.3	52.1
	18	1	.3	.3	52.4
	30	1	.3	.3	52.7
	32	1	.3	.3	53.0
	35	1	.3	.3	53.3
	36	2	.6	.6	53.9
	40	4	1.3	1.3	55.2
	50	10	3.2	3.2	58.4
	60	1	.3	.3	58.7
	75	21	6.6	6.6	65.3
	100	32	10.1	10.1	75.4
	120	1	.3	.3	75.7
	140	1	.3	.3	76.0
	150	31	9.8	9.8	85.8
	170	1	.3	.3	86.1
	175	4	1.3	1.3	87.4
	200	20	6.3	6.3	93.7
	240	1	.3	.3	94.0
	250	1	.3	.3	94.3
	260	1	.3	.3	94.6
	275	1	.3	.3	95.0
	300	7	2.2	2.2	97.2
	310	1	.3	.3	97.5
	350	1	.3	.3	97.8
	360	1	.3	.3	98.1
	500	3	.9	.9	99.1
	720	1	.3	.3	99.4
	1000	1	.3	.3	99.7
	1010	1	.3	.3	100.0
TOTAL		317	100.0	100.0	

EXPOSED CHIMNEY AREA

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

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171          15 *****
36          64 *****
33          113 *****
37          162 *****
20          211 *****
4           260 *
8           309 **
2           359 *
0           407
0           456
3           505 *
0           554
0           603
0           652
1           701
0           750
0           799
0           848
0           897
0           946
2           995 *

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0 40 80 120 160 200
HISTOGRAM FREQUENCY

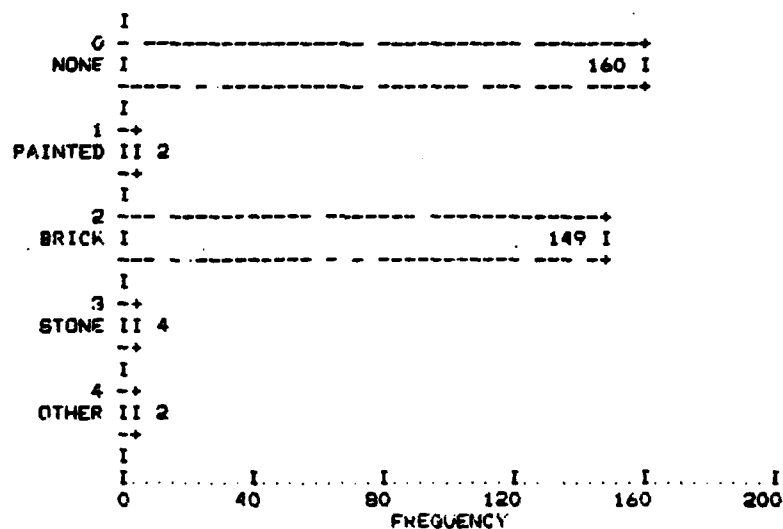
MEAN	75.379	STD ERR	6.988	MEDIAN	0.0
MODE	0.0	STD DEV	124.418	VARIANCE	15479.913
KURTOSIS	21.376	S E KURT	1.994	SKEWNESS	3.722
S E SKEN	.137	RANGE	1010.000	MINIMUM	0.0
MAXIMUM	1010.000	SUM	23995.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	100.000	75.00	100.000
70.00	200.000				

VALID CASES	317	MISSING CASES	0
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CHAT CHIMNEY MATERIAL

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NONE	0	160	50.5	50.5	50.5
PAINTED	1	2	.6	.6	51.1
BRICK	2	149	47.0	47.0	98.1
STONE	3	4	1.3	1.3	99.4
OTHER	4	2	.6	.6	100.0
TOTAL		317	100.0	100.0	



MEAN	1.009	STD ERR	.059	MEDIAN	0.0
MODE	0.0	STD DEV	1.042	VARIANCE	1.085
KURTOSIS	-1.571	S E KURT	1.994	SKEWNESS	.184
S E SKEW	.137	RANGE	4.000	MINIMUM	0.0
MAXIMUM	4.000	SUM	320.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
25.00	0.0	25.00	0.0	33.33	0.0
50.00	0.0	50.00	2.000	75.00	2.000
75.00	2.000				

PERCENTILE 0.00 100.00 100.00 100.00 100.00

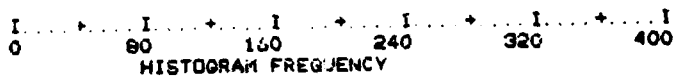
ESAREA AREA OF EXPOSED ROOF

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
90	1	0	0	1907	1	0	60	14800	1	0	82
500	2	1	1	1953	1	0	60	15000	4	1	83
600	2	1	2	1930	1	0	61	16000	2	1	84
810	4	1	3	1986	1	0	61	16800	1	0	84
655	3	1	4	2000	4	1	62	18000	1	0	85
670	14	4	8	2100	1	0	62	18480	1	0	85
873	1	0	9	2154	1	0	63	19800	1	0	85
680	3	1	9	2250	1	0	63	20000	2	1	86
693	3	1	10	2400	2	1	64	21000	1	0	86
700	7	3	13	2500	2	1	64	21600	1	0	86
768	33	10	24	2579	1	0	65	21840	1	0	87
770	1	0	24	2700	1	0	65	22500	1	0	87
780	1	0	24	2760	1	0	65	23400	1	0	87
783	1	0	25	2800	1	0	66	24000	1	0	88
800	4	1	26	2830	1	0	66	24300	1	0	88
807	1	0	26	3000	4	1	67	25200	1	0	88
820	1	0	26	3100	1	0	68	27000	1	0	89
825	1	0	27	3200	1	0	68	27300	1	0	89
850	1	0	27	3500	4	1	69	29000	1	0	89
860	7	2	29	3600	1	0	69	30000	2	1	90
877	3	1	30	4000	4	1	71	31860	1	0	90
900	1	0	31	4500	2	1	71	32000	1	0	91
933	12	4	34	4800	1	0	72	32700	1	0	91
950	13	6	40	4900	1	0	72	33400	1	0	91
970	2	1	41	5500	1	0	72	36000	1	0	91
980	1	0	41	6000	1	0	73	38400	1	0	92
1000	4	1	42	6400	1	0	73	40000	2	1	92
1131	2	1	43	6462	1	0	73	40500	1	0	93
1200	3	3	45	6500	2	1	74	45000	1	0	93
1221	2	1	46	6900	1	0	74	56000	1	0	93
1225	1	0	46	7000	3	1	75	57000	1	0	94
1250	1	0	47	7200	3	1	76	66000	1	0	94
1265	1	0	47	8000	2	1	77	69696	9	3	97
1270	1	0	47	9000	5	2	78	70000	1	0	97
1271	21	7	54	10000	2	1	79	102640	1	0	97
1346	1	0	54	10120	1	0	79	180000	1	0	98
1350	2	1	55	10800	1	0	79	240000	1	0	98
1400	3	1	56	11440	1	0	80	251200	1	0	98
1500	4	1	57	12000	1	0	80	320000	1	0	97
1600	3	1	58	13000	1	0	80	375000	3	1	100
1725	1	0	58	14000	1	0	81	999999	1	0	100
1833	2	1	59	14300	1	0	81				
1900	2	1	60	14400	2	1	82				

AREA OF EXPOSED ROOF

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES

275	23895	*****
13	71910	**
1	119125	
1	166740	
0	214355	
2	261970	
1	309585	
3	357200	
0	404915	
0	452430	
0	500045	
0	547660	
0	595275	
0	642890	
0	690505	
0	738120	
0	785735	
0	833350	
0	880965	
0	928580	
1	976195	



MEAN	17637.975	STD ERR	4092.816	MEDIAN	1271.000
MODE	768.000	STD DEV	72870.523	VARIANCE	5310113140
KURTOSIS	110.762	S E KURT	1.994	SKEWNESS	9.398
S E SKEW	.137	RANGE	999909.000	MINIMUM	70.000
MAXIMUM	999979.000	SUM	5591238.00		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	673.000	25.00	800.000	33.30	933.000
50.00	1271.000	66.70	3000.000	75.00	7100.000
90.00	31808.000				

VALID CASES 317 MISSING CASES 0

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
TAR	1	119	37.5	37.5	37.5
ASPHALT SHINGLE	2	174	54.9	54.9	92.4
PAINTED METAL	4	4	1.3	1.3	93.7
BARE GALVANIZED	5	1	.3	.3	94.0
TILE	6	3	.9	.9	95.0
SLATE	7	12	3.8	3.8	98.7
COPPER	8	1	.3	.3	99.1
OTHER	9	3	.9	.9	100.0
TOTAL		317	100.0	100.0	

1	-----	+
TAR	I	119 I
	-----	+
	I	
2	-----	+
ASPHALT SHINGLE	I	174 I
	-----	+
	I	
4	--+	
PAINTED METAL	II	4
	--+	
	I	
5	+	
BARE GALVANIZED	I	1
	+	
	I	
6	--+	
TILE	II	3
	--+	
	I	
7	--+	
SLATE	I	I 12
	--+	
	I	
8	+	
COPPER	I	1
	+	
	I	
9	--+	
OTHER	II	3
	--+	
	:	
	:	
	:	

ENRAT ROD MATERIAL TYPE

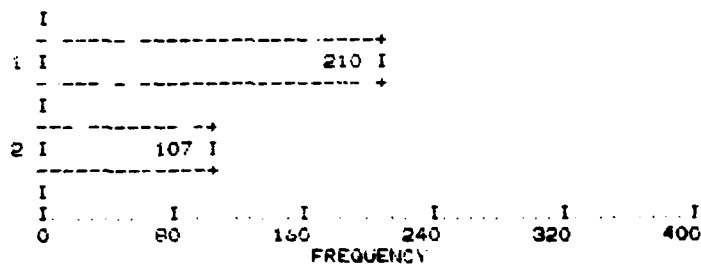
MEAN	1.972	STD ERR	.082	MEDIAN	2.000
MODE	2.000	STD DEV	1.461	VARIANCE	2.135
KURTOSIS	9.252	S E KURT	1.994	SKEWNESS	2.995
S E SKEW	.137	RANGE	8.000	MINIMUM	1.000
MAXIMUM	9.000	SUM	625.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	1.000	25.00	1.000	33.30	1.000
50.00	2.000	66.70	2.000	75.00	2.000
90.00	2.000				

VALID CASES 317 MISSING CASES 0

SLOPE INDICATOR ROOF SLOPE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	1	210	66.2	66.2	66.2
	2	107	33.8	33.8	100.0
	TOTAL	317	100.0	100.0	



MEAN	1.339	STD ERR	.027	MEDIAN	1.000
MODE	1.000	STD DEV	.474	VARIANCE	.224
KURTOSIS	-1.533	S E KURT	1.994	SKEWNESS	.690
S E SKEW	.137	RANGE	1.000	MINIMUM	1.000
MAXIMUM	2.000	SUM	424.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	1.000	25.00	1.000	33.30	1.000
50.00	1.000	56.70	2.000	75.00	2.000
90.00	2.000				
VALID CASES	317	MISSING CASES	0		

ITEM1 NO OF VENTS, FLUES, STACKS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	127	40.1	40.1	40.1
	1	114	36.0	36.0	76.0
	2	22	6.9	6.9	83.0
	3	12	3.8	3.8	86.8
	4	12	3.8	3.8	90.5
	5	9	2.8	2.8	93.4
	6	1	.3	.3	93.7
	8	3	.9	.9	94.6
	10	5	1.6	1.6	96.2
	15	1	.3	.3	96.5
	20	4	1.3	1.3	97.8
	50	3	.9	.9	98.7
	75	1	.3	.3	99.1
	80	1	.3	.3	99.4
	99	2	.6	.6	100.0
TOTAL		317	100.0	100.0	

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES

241	-1	*****
16	4	*****
8	9	*
1	14	
4	19	*
0	24	
0	29	
0	34	
0	39	
0	44	
0	49	
0	54	
0	59	
0	64	
0	69	
1	74	
1	79	
0	84	
0	89	
1	94	
1	99	

:	*	I	+	I	+	I	+	I	+	I
:		80		160		240		320		400

HISTOGRAM FREQUENCY

ITEM1 NO OF VENTS, FLOES, STACKS

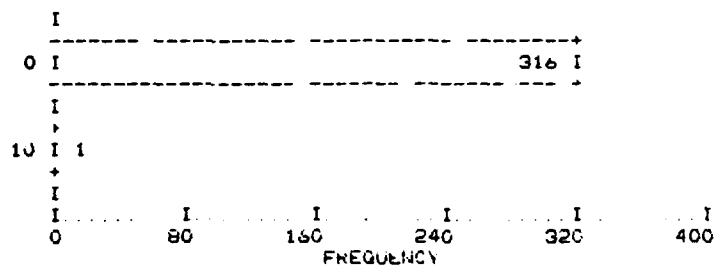
MEAN	3.044	STD ERR	.628	MEDIAN	1.000
MODE	0.0	STD DEV	11.176	VARIANCE	124.903
KURTOSIS	47.910	S.E. KURT	1.994	SKEWNESS	6.672
S.E. SKEW	.137	RANGE	99.000	MINIMUM	0.0
MAXIMUM	99.000	SUM	965.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	1.000	56.70	1.000	75.00	1.000
90.00	4.000				

VALID CASES 317 MISSING CASES 0

ITEM2 NO OF SKYLIGHTS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	316	99.7	99.7	99.7
	10	1	.3	.3	100.0
	TOTAL	317	100.0	100.0	



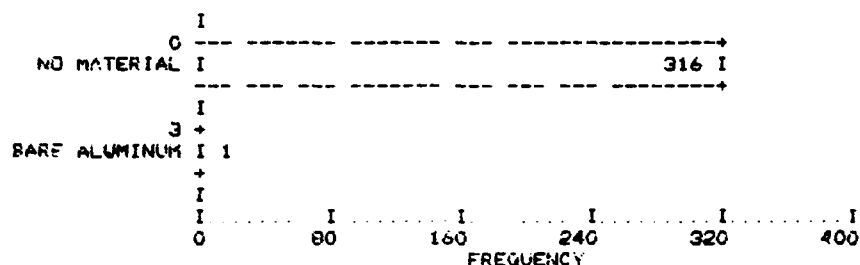
MEAN	.032	STD ERR	.032	MEDIAN	0.0
MODE	0.0	STD DEV	.562	VARIANCE	.315
KURTOSIS	317.000	S.E. KURT	1.994	SKEWNESS	17.804
S.E. SKEW	.137	RANGE	10.000	MINIMUM	0.0
MAXIMUM	10.000	SUM	10.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	56.70	0.0	75.00	0.0
90.00	0.0				

VALID CASES 317 MISSING CASES 0

DATA SKYLIGHT MATERIAL

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NO MATERIAL	0	316	99.7	99.7	99.7
BARE ALUMINUM	3	1	.3	.3	100.0
	TOTAL	317	100.0	100.0	



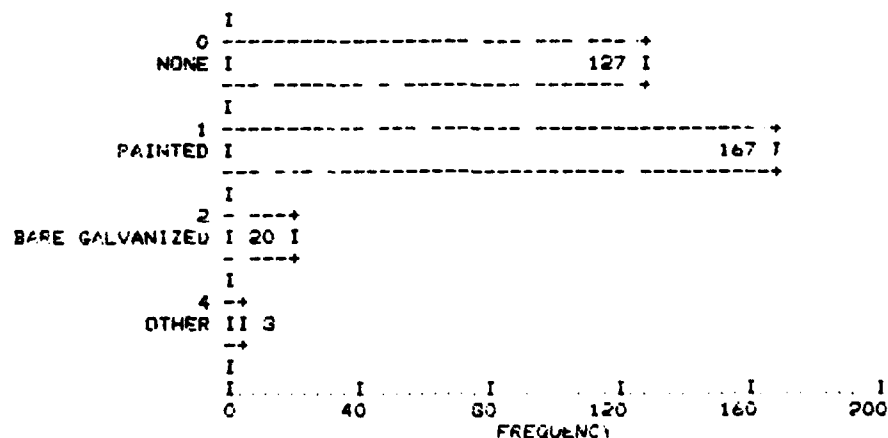
MEAN	.009	STD ERR	.009	MEDIAN	0.0
MODE	0.0	STD DEV	.168	VARIANCE	.028
KURTOSIS	317.000	S.E. KURT	1.994	SKEWNESS	17.804
S.E. SKEW	.137	RANGE	3.000	MINIMUM	0.0
MAXIMUM	3.000	SUM	3.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	56.70	0.0	75.00	0.0
90.00	0.0				

VALID CASES 317 MISSING CASES 0

DATA ROOF APP MATERIAL

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NONE	0	127	40.1	40.1	40.1
PAINTED	1	167	52.7	52.7	92.7
BARE GALVANIZED	2	20	6.3	6.3	99.1
OTHER	4	3	.9	.9	100.0
	TOTAL	317	100.0	100.0	



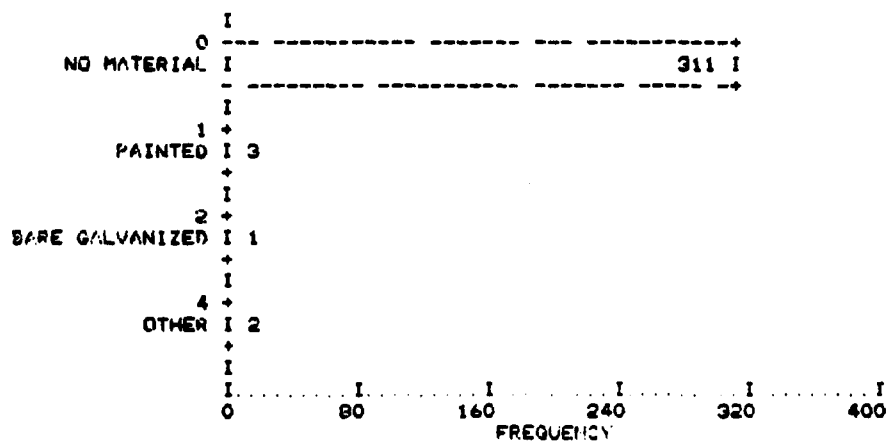
MEAN	.691	STD ERR	.038	MEDIAN	1.000
MODE	1.000	STD DEV	.674	VARIANCE	.455
KURTOSIS	3.973	S E KURT	1.994	SKEWNESS	1.211
S E SKEW	.137	RANGE	4.000	MINIMUM	0.0
MAXIMUM	4.000	SUM	219.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	1.000	50.00	1.000	75.00	1.000
90.00	1.000				

VALID CASES 317 MISSING CASES 0

FLMST FLASHING MATERIAL

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NO MATERIAL	0	311	98.1	98.1	98.1
PAINTED	1	3	.9	.9	99.1
BARE GALVANIZED	2	1	.3	.3	99.4
OTHER	4	2	.6	.6	100.0
TOTAL		317	100.0	100.0	



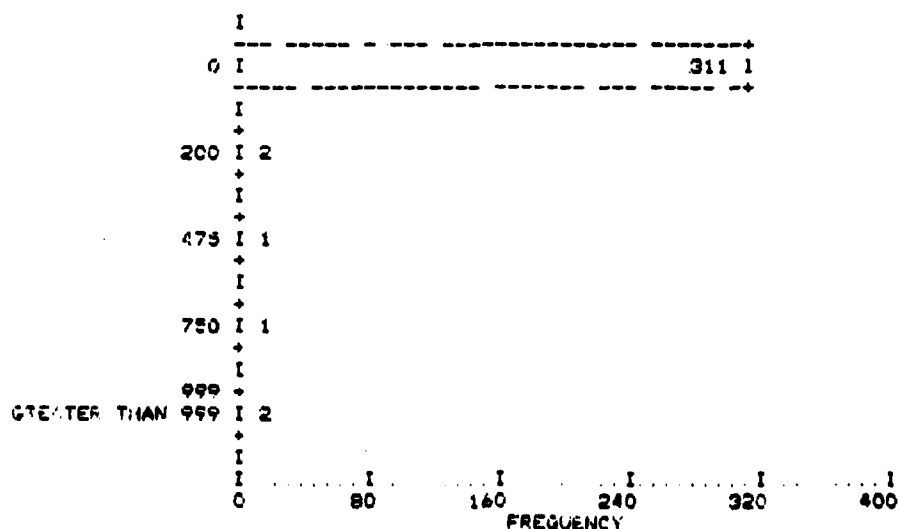
MEAN	.041	STD ERR	.020	MEDIAN	0.0
MODE	0.0	STD DEV	.349	VARIANCE	.122
KURTOSIS	107.666	S E KURT	1.994	SKEWNESS	10.066
S E SKEW	.137	RANGE	4.000	MINIMUM	0.0
MAXIMUM	4.000	SUM	13.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	50.00	0.0	75.00	0.0
90.00	0.0				

VALID CASES 317 MISSING CASES 0

TABLE 4 FLASHING AREA SQ FT

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	311	98.1	98.1	98.1
	200	2	.6	.6	98.7
	475	1	.3	.3	99.1
	750	1	.3	.3	99.4
GREATER THAN 999	999	2	.6	.6	100.0
	TOTAL	317	100.0	100.0	



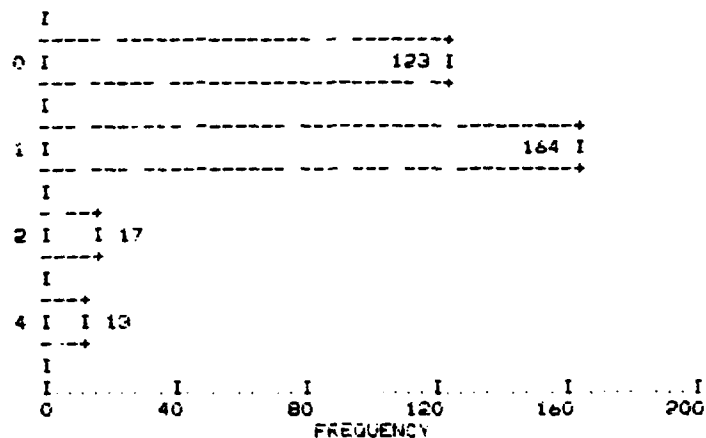
MEAN	11.429	STD ERR	5.306	MEDIAN	0.0
MODE	0.0	STD DEV	94.913	VARIANCE	8932.657
KURTOSIS	87.863	S F KURT	1.994	SKEWNESS	9.211
S E MEAN	.137	RANGE	999.000	MINIMUM	0.0
MAXIMUM	999.000	SUM	3623.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
25.00	0.0	50.00	0.0	75.00	0.0
01.00	0.0	05.00	0.0	95.00	0.0

Rain gutters, downspouts and fences

ROADT RAIN GUTTER MATERIAL

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	123	38.8	38.8	38.8
	1	164	51.7	51.7	90.5
	2	17	5.4	5.4	95.9
	4	13	4.1	4.1	100.0
TOTAL		317	100.0	100.0	



MEAN	.789	STD ERR	.049	MEDIAN	1.000
MODE	1.000	STD DEV	.877	VARIANCE	.768
KURTOSIS	4.984	S E KURT	1.994	SKEWNESS	1.900
S E S-DE	.137	RANGE	4.000	MINIMUM	0.0
MAXIMUM	4.000	SUM	250.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	1.000	66.70	1.000	75.00	1.000
90.00	1.000				

VALID CASES 317 MISSING CASES 0

RS LENGTH RAIN GUTTER LENGTH

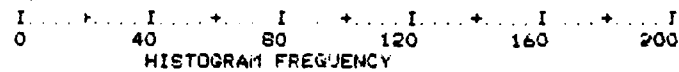
VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	123	38.8	38.8	38.8
	4	1	.3	.3	39.1
	30	3	.9	.9	40.1
	40	6	1.9	1.9	42.0
	45	1	.3	.3	42.3
	50	6	1.9	1.9	44.2
	60	33	10.4	10.4	54.6
	70	19	6.0	6.0	60.6
	80	49	15.5	15.5	76.0
	90	28	8.8	8.8	84.9
	100	22	6.9	6.9	91.8
	110	1	.3	.3	92.1
	120	2	.6	.6	92.7

130	1	.3	.3	93.1
140	4	1.3	1.3	94.3
150	6	1.9	1.9	96.2
160	1	.3	.3	96.5
200	1	.3	.3	96.8
250	2	.6	.6	97.5
260	1	.3	.3	97.8
300	1	.3	.3	98.1
340	1	.3	.3	98.4
400	1	.3	.3	98.7
560	1	.3	.3	99.1
600	1	.3	.3	99.4
999	2	.6	.6	100.0
<hr/>				
TOTAL	317	100.0	100.0	

FILTRNTH RAIN GUTTER LENGTH

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

133	20	*****
136	65	*****
26	116	*****
11	164	***
1	212	
3	260	*
1	308	
1	356	
1	404	
0	452	
0	500	
1	548	
1	596	
0	644	
0	692	
0	740	
0	788	
0	836	
0	884	
0	932	
2	980	*



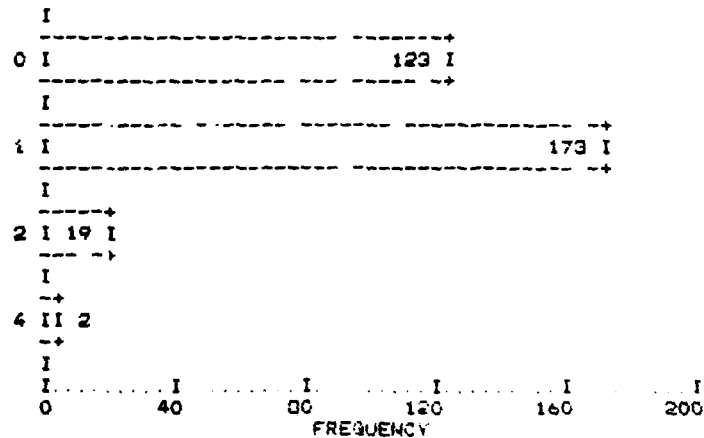
MEAN	62.735	STD ERR	5.756	MEDIAN	60.000
MODE	0.0	STD DEV	102.479	VARIANCE	10501.999
PORTSIS	46.983	S.E. KURT	1.994	SKEWNESS	5.902
S.E. SKEN	.137	RANGE	999.000	MINIMUM	0.0
MAXIMUM	999.000	SUM	19887.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	60.000	66.70	80.000	75.00	80.000
90.00	100.000				

VALID CASES	317	MISSING CASES	0
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ESPOUT MATERIAL OF DOWNSPOUT

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	123	38.8	38.8	38.8
	1	173	54.6	54.6	93.4
	2	19	6.0	6.0	99.4
	4	2	.6	.6	100.0
	TOTAL	317	100.0	100.0	



MEAN	1.691	STD ERR	.036	MEDIAN	1.000
MODE	1.000	STD DEV	.641	VARIANCE	.410
PURTOSIS	3.198	S E KURT	1.994	SKEWNESS	.965
S E SKEW	.137	RANGE	4.000	MINIMUM	0.0
MAXIMUM	4.000	SUM	219.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	1.000	66.70	1.000	75.00	1.000
90.00	1.000				

VALID CASES 317 MISSING CASES 0

ISLENG DOWNSPOUT LENGTH

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	123	38.8	38.8	38.8
	20	2	.6	.6	39.4
	25	2	.6	.6	40.1
	30	22	6.9	6.9	47.0
	40	45	14.2	14.2	61.2
	45	2	.6	.6	61.8
	50	35	11.0	11.0	72.9
	60	55	17.4	17.4	90.2
	70	2	.6	.6	90.9
	80	15	4.7	4.7	95.6
	90	2	.6	.6	96.2
	100	2	.6	.6	96.8
	120	2	.6	.6	97.5
	130	2	.6	.6	98.1
	200	2	.6	.6	98.7

240	1	3	3	99.1
300	1	3	3	99.4
500	2	6	6	100.0
TOTAL	317	100.0	100.0	

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

125	10	*****
130	34	*****
135	58	*****
140	82	*****
145	106	*
150	130	*
155	154	*
160	178	*
165	202	*
170	226	
175	250	
180	274	
185	298	
190	322	
195	346	
200	370	
205	394	
210	418	
215	442	
220	466	
225	490	

DELENG DOWNSPOT LENGTH

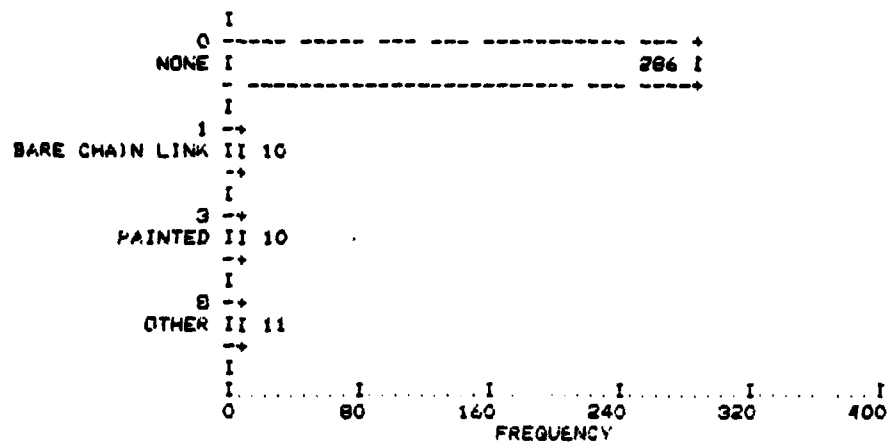
MEAN	37.697	STD ERR	2.991	MEDIAN	40.000
MODE	0.0	STD DEV	53.252	VARIANCE	2835.619
KURTOSIS	37.246	S E KURT	1.994	SKEWNESS	4.964
S E SKEW	.137	RANGE	500.000	MINIMUM	0.0
MAXIMUM	500.000	SUM	11750.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	40.000	50.00	50.000	75.00	60.000
90.00	62.000				

VALID CASES 317 MISSING CASES 0

FENCE FENCE TYPE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NON-	0	296	90.2	90.2	90.2
SPRE CHAIN LINK	1	10	3.2	3.2	93.4
PAINTED	3	10	3.2	3.2	96.5
OTHER	5	11	3.5	3.5	100.0
TOTAL		317	100.0	100.0	



MEAN	.404	STD ERR	.087	MEDIAN	0.0
MODE	0.0	STD DEV	1.543	VARIANCE	2.381
VURTOSIS	18.076	S E KURT	1.994	SKENNESS	4.317
S E SKEN	.137	RANGE	8.000	MINIMUM	0.0
MAXIMUM	8.000	SUM	128.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	56.70	0.0	75.00	0.0
90.00	200				

VALID CASES	317	MISSING CASES	0
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FADEA FENCE AREA

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	286	70.2	90.2	90.2
	45	3	.9	.9	91.2
	60	1	.3	.3	91.5
	75	5	1.6	1.6	93.1
	90	2	.6	.6	93.7
	120	1	.3	.3	94.0
	180	1	.3	.3	94.3
	240	2	.6	.6	95.0
	300	1	.3	.3	95.3
	360	1	.3	.3	95.6
	400	1	.3	.3	95.9
	500	1	.3	.3	96.2
	780	1	.3	.3	96.5
	800	1	.3	.3	96.8
	999	10	3.2	3.2	100.0
TOTAL		317	100.0	100.0	

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES

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288      20 *****
11       65 *
1       116
1       164
0       212
2       260
1       308
1       356
1       404
0       452
1       500
0       548
0       596
0       644
0       692
0       740
0       788
0       836
0       884
0       932
0       980

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I I I I I I
 80 160 240 320 400
 HISTOGRAM FREQUENCY

FAPEA PRICE AREA

MEAN	46.246	STD ERP	10.666	MEDIAN	0.0
MODE	0.0	STD DEV	189.904	VARIANCE	36063.427
KURTOSIS	19.114	S E KURT	1.994	SKEWNESS	4.456
S E SKEW	137	RANGE	979.000	MINIMUM	0.0
MAXIMUM	979.000	SUM	14560.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	0.0	75.00	0.0
90.00	9.000				

VALID CASES 317 MISSING CASES 0

END

FILMED

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